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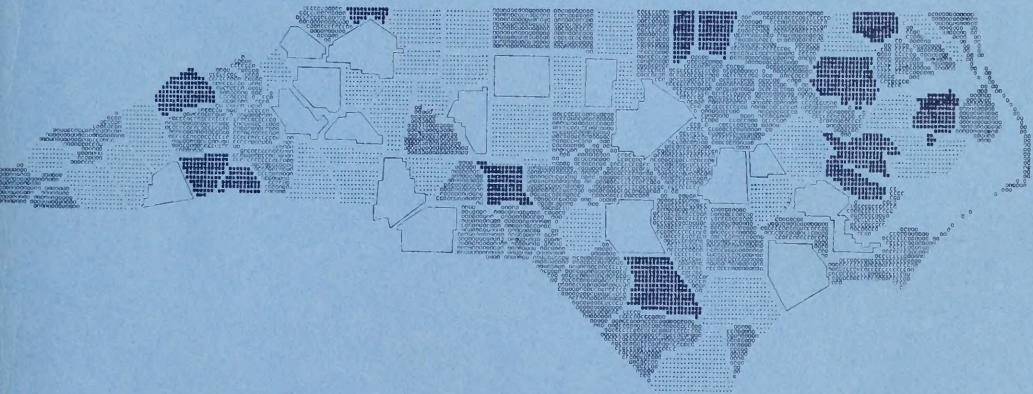
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LEADING CAUSES OF MORTALITY



NORTH CAROLINA
VITAL STATISTICS 1971-73

VOLUME 2

LEADING CAUSES OF MORTALITY

**NORTH CAROLINA
VITAL STATISTICS 1971-73
VOLUME 2**

Raleigh, North Carolina

**DEPARTMENT OF HUMAN RESOURCES
DIVISION OF HEALTH SERVICES
ADMINISTRATIVE SERVICES SECTION
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TABLE OF CONTENTS

	<u>Page</u>
PREFACE	v
I. INTRODUCTION	1
Description of Maps	3
Description of Tables	6
II. NORTH CAROLINA'S POPULATION AND HEALTH CARE RESOURCES	9
County Populations	11
County Population Per Primary Care Physician	13
County Population Per Registered Nurse	14
County Population Per Hospital Bed	15
III. GENERAL MORTALITY	23
IV. MAJOR CARDIOVASCULAR DISEASE MORTALITY	35
Heart Disease	37
Acute Myocardial Infarction	45
Other Ischemic Heart Disease	53
Hypertension	61
Cerebrovascular Disease	71
Arteriosclerosis	81
V. CANCER MORTALITY	89
Total Cancer	91
Cancer of the Stomach	101
Cancer of the Colon and Rectum	109
Cancer of the Pancreas	117
Cancer of the Trachea, Bronchus and Lung	125
Female Breast Cancer	135
Cancer of the Cervix Uteri	145
Cancer of the Ovary, Fallopian Tube and Broad Ligament	153
Cancer of the Prostate	161
Leukemia	169

	<u>Page</u>
VI. OTHER SELECTED DISEASE MORTALITY	177
Diabetes Mellitus	179
Influenza and Pneumonia	187
Bronchitis, Emphysema and Asthma	195
Cirrhosis of the Liver	203
Nephritis and Nephrosis	213
VII. MAJOR EXTERNAL CAUSES OF MORTALITY	221
Accidents	223
Motor Vehicle Accidents	224
Accidents Excluding Motor Vehicles	237
Suicide	245
Homicide	255
VIII. INFANT MORTALITY	263
IX. SUMMARY	271
REFERENCES	275

PREFACE

This volume was prepared and produced by the Public Health Statistics Branch in collaboration with the Chronic Disease Branch of the Division of Health Services, North Carolina Department of Human Resources. Other major contributors to the contents of this publication include the following: Health Services Research Center, University of North Carolina; North Carolina Board of Medical Examiners; North Carolina Board of Nursing; North Carolina Division of Facility Services; North Carolina Division of Environmental Management; North Carolina Division of Motor Vehicles; and North Carolina Board of Alcoholic Control. We are also indebted to Rhonda Robinson, graduate student in Statistics at North Carolina State University, whose summer work contributed to the production of maps utilized in this report.

I. INTRODUCTION

I. INTRODUCTION

Owing to the favorable age structure of its population, North Carolina has traditionally enjoyed relatively low death rates, but its status among states is declining. In 1960, only seven of the 50 states had death rates lower than North Carolina (1). In 1973, twenty states had lower rates (2). This, it would seem, represents a serious challenge to health officials throughout the State to (i) identify high-risk areas in order that medical services may be strategically applied and (ii) isolate those determinants of mortality which permit intervention. The data of this volume are intended to aid in these areas of investigation by providing baseline information against which North Carolina's county and regional mortality may be assessed in the present and continually evaluated in the future.

In the sections to follow, maps and tabular data describe North Carolina's experience with respect to general mortality, cause-specific mortality and infant mortality for the period 1971-1973. Table 1 on page 7 describes the selected cause of death categories in terms of codes from the International Classification of Diseases, Adapted (3). Altogether, the specific causes selected for examination in this report accounted for 85 percent of all North Carolina deaths during 1973.

Description of Maps

This volume contains 56 computer-produced maps (4) which depict data for the State's 100 counties. A PLASTIC OVERLAY, provided in the back cover, outlines and identifies counties and four regions of the Department of Human Resources.

In Section II, three maps portray each county's relative status amongst the 100 counties with respect to population per primary care physician, population per registered nurse and population per short-term general hospital bed. It is hoped that these maps together with information concerning county populations and county mortality levels will aid in the determination of areas most in need of increased health care resources.

In Sections III-VIII, 53 maps which depict geographical patterns in mortality should aid in the resolution of specific types of health care needs. Except in the case of infant mortality (Section VIII), two maps are shown for each cause of death category. The general mortality rates of Section III are expressed as deaths per 1,000 population while all cause-specific mortality rates (Sections IV-VII) are expressed as deaths per 100,000 population. The two maps depict the following information:

Actual Death Rates: The 1971-73 average annual death rates computed as average resident deaths per 1,000 or 100,000 average county population during the three-year period (5). These rates, shown in the Series A maps printed in black, permit the user knowledge of a county's status with respect to the actual incidence of mortality.

Adjusted Death Rates: The 1971-73 average annual age-race-sex-adjusted rates, computed by the direct method (6). Also expressed as deaths per 1,000 or 100,000 population, these rates are those which would be expected if the average annual age, race and sex composition of each county's population were the same as that projected for the State (7). These rates, shown in the Series B maps printed in red, are free of the effects of age, race and sex and thus permit the user knowledge of a county's status with respect to other determinants of mortality.

As indicated by the map legends, each mortality map shows four levels of death rates. Considering level one the lowest rate interval and level four the highest, the levels were determined by the death rate distributions such that the following properties apply:

a) The middle two levels = $\bar{x} \pm (M)(S.D.)$

where \bar{x} = the mean or average county death rate,

M = a multiple less than or equal to 1.00,

$S.D.$ = the standard deviation of the county death rates;

b) M is chosen such that rates in each interval are homogeneous;

c) \bar{x} is the lower limit of level 3.

To assess a county's relative mortality conditions, both the actual rate and the adjusted rate can be compared to the State rate for a particular cause of death (Table 1, page 7). Then, provided the county's actual rate represents a relatively stable situation, viz., the rate has not fluctuated widely in recent years, the following alternative diagnoses will apply:

<u>Actual Rate</u>	<u>Adjusted Rate</u>	<u>Diagnosis</u>
Low	Low	Low mortality is not due to age, race and sex factors; other mortality conditions are favorable.
Low	High	Low mortality is due to favorable age, race and sex factors; other mortality conditions are unfavorable.
High	Low	High mortality is due to unfavorable age, race and sex factors; other mortality conditions are favorable.
High	High	High mortality is not due to age, race and sex factors; other mortality conditions are unfavorable.

Description of Tables

Sections III-VIII contain 27 tables which summarize the recent mortality experience of counties, four regions and the State. Except in the case of infant deaths (Section VIII), a table corresponding to each cause of death category includes the following items of information:

- 1) The number of resident deaths occurring during 1973;
- 2) The 1973 death rate, computed as the number of 1973 resident deaths per 1,000 or 100,000 projected population as of July 1, 1973;
- 3) The 1971-73 average annual death rate computed as average resident deaths per 1,000 or 100,000 average population during the three-year period;
- 4) The 1971-73 average annual age-race-sex-adjusted death rate computed by the direct method (6).

Population projections for the rates described above were provided by the Office of State Planning of the North Carolina Department of Administration (5,7,8). Again, general mortality rates (all causes combined) are expressed as deaths per 1,000 population while cause-specific rates are expressed as deaths per 100,000 population. The infant death rates of Table 28, Section VIII, are computed as the number of infant deaths per 1,000 live births.

Table 1 on the following page shows the statewide statistics described in 1-3 above for the causes of death examined in this report.

TABLE 1
MORTALITY STATISTICS FOR 1973 AND 1971-1973
NORTH CAROLINA RESIDENTS

Cause of Death - Eighth Revision International Classification of Diseases, Adapted (29)	Number of Deaths 1973	Death Rate* 1973	Death Rate* 1971-1973
All Causes	47,704	9.1	9.0
Heart Disease 390-398,402,404,410-429	17,317	331.2	323.4
Acute Myocardial Infarction 410	9,096	174.0	170.2
Other Ischemic Heart Disease 411-413	6,619	126.6	121.8
Hypertension 400,401,403	241	4.6	4.6
Cerebrovascular Diseases 430-438	5,883	112.5	109.7
Arteriosclerosis 440	705	13.5	13.1
Cancer 140-209	7,416	141.9	136.2
Cancer of the Stomach 151	291	5.6	5.6
Cancer of the Colon and Rectum 153,154	748	14.3	14.1
Cancer of the Pancreas 157	432	8.3	7.5
Cancer of the Trachea, Bronchus and Lung 162	1,585	30.3	28.2
Female Breast Cancer 174	610	22.8	22.8
Cancer of the Cervix Uteri 180	194	7.3	7.2
Cancer of the Ovary, Fallopian Tube and Broad Ligament 183	221	8.3	7.3
Cancer of the Prostate 185	455	17.8	16.8
Leukemia 204-207	352	6.7	6.4
Diabetes Mellitus 250	878	16.8	17.0
Influenza and Pneumonia 470-474,480-486	1,524	29.2	28.4
Bronchitis, Emphysema and Asthma 490-493	603	11.5	12.3
Cirrhosis of the Liver 571	777	14.9	13.4
Nephritis and Nephrosis 580-584	241	4.6	5.1
Motor Vehicle Accidents 810-823	1,895	36.2	36.8
Accidents Excluding Motor Vehicles 800-807,825-949	1,733	33.1	32.7
Suicide 950-959	702	13.4	12.5
Homicide 960-978	821	15.7	14.5

*See items 2 and 3 on the preceding page for definitions.

III. NORTH CAROLINA'S POPULATION AND HEALTH CARE RESOURCES

II. NORTH CAROLINA'S POPULATION AND HEALTH CARE RESOURCES

In presenting this volume, it is our hope to examine facts and raise questions which have to do with a basic right of all citizens--that of equal access to health care. As yet, this basic right has been precluded in North Carolina by such interrelated deterrents as poverty, rurality, and unavailability or inaccessibility of health care resources. For the United States as a whole, the physician/patient ratio in 1971 was 128 patient-care physicians per 100,000 population. The comparable ratio for North Carolina was 92, twelfth from the bottom among ratios for the 50 States. (9) This fact, in concert with certain population characteristics and environmental conditions, is contributing to suffering and premature death in North Carolina.

Presented in this section are three maps which describe selected health care resources in the State's 100 counties. Ratios used in the maps were computed by the Health Services Research Center of the University of North Carolina with county populations being those projected to July 1, 1973 (5). Each map depicts four levels of ratios, the levels being determined in the manner described for death rates (see page 5). It is hoped that these data, together with the following discussion of county populations, will aid health officials and others in planning for improved health conditions throughout the State.

County Populations

Underscoring the State's standing need for additional health care resources, the North Carolina population increased 15 percent between 1960

and 1973 and is expected to increase an additional 8 percent by 1980 (7,10). Population projections available for counties may be used to determine local population changes expected during the 1970's (5).

The State's 100 counties vary widely with respect to population characteristics and thus with respect to disease and mortality proneness. Knowledge of these differences is essential to the equitable distribution of health care resources.

While detailed analysis of each county's population is beyond the scope of this report, the table below provides baseline data against which a county's population may be compared. The table includes demographic characteristics regarded as high-risk factors in disease and mortality. Comparable county data are available (5,9).

Area	Percent Nonwhite Population (7,8,11)	Percent Age 65 and Older Population (7,8,11)	Percent Rural Population (9)	Percent Persons Below Poverty Level (9)
United States	12.8	10.1	26.0	13.7
North Carolina	22.7	8.7	55.1	20.3
DHR Regions:				
Eastern	33.3	8.4	62.7	29.5
South Central	29.3	7.5	50.4	22.8
North Central	21.0	9.0	50.0	15.8
Western	13.0	9.4	56.5	15.8

Comparing each county to the State as a whole, only seven counties fail to exceed at least one of the percentages given on line 2 above. These counties, representing relatively favorable demographic characteristics, are: Alamance, Forsyth, Gaston, Guilford, New Hanover, Orange, and Wake. In contrast,

thirty-one counties exceeded all four State percentages given in the preceding table. These counties, which comprise fairly well-defined geographical pockets in Central and Eastern North Carolina, are:

Anson	Gates	Northhampton
Beaufort	Granville	Pamlico
Bertie	Halifax	Pender
Bladen	Hertford	Perquimans
Camden	Hyde	Person
Caswell	Jones	Richmond
Chowan	Martin	Sampson
Columbus	Montgomery	Tyrrell
Currituck	Moore	Vance
Duplin	Nash	Warren
Franklin		

County Population Per Primary Care Physician

The primary care physician is defined as a non-federal M.D. or D.O. (doctor of osteopathy) in the following primary care fields: general practice, internal medicine, general surgery, pediatrics, and obstetrics/gynecology (9). The ratios depicted in Figure 1.A are the county populations per such physician practicing in the county and listed by the North Carolina Board of Medical Examiners on December 31, 1974. Since federal physicians are not included but county populations include members of the armed forces, ratios are biased upward for counties with large armed forces populations, viz., the average potential case load per physician is less than indicated in Figure 1.A.

The majority of a county's health care needs can be met by the primary care physician, and the population/physician ratios of Figure 1.A

(page 17) provide a measure of the average potential case load to be served. It is stressed, however, that there is no "ideal" against which a county's ratio can be compared, verily as county populations vary with respect to health care needs. Certainly, younger populations can tolerate a higher population/physician ratio than can older populations.

With this in mind, consider the 15 level-four counties whose ratios were significantly higher than the average county ratio (including Caswell County with no physician). No doubt, all of these counties need physicians, but perhaps some more than others. It is noted, for example, that eight of these 15 level-four counties are also high risk with respect to four demographic factors associated with disease and mortality (see pages 12, 13). Thus, these eight counties, as well as some level-three counties which are demographically high risk, would seem priority areas for recruitment of primary care physicians. However, complete assessment of county needs and priorities should include more complete analysis of population characteristics than that presented here and should also involve geographical patterns in mortality as discussed later in this volume.

County Population Per Registered Nurse

The ratios of Figure 1.B are the county populations per active registered nurse residing in the county and licensed to practice in North Carolina during 1972-74. Provided by the North Carolina Board of Nursing, the list of registered nurses includes those who were active on December 31, 1973 in either federal or non-federal practices.

As expected, counties with relatively few nurses (Figure 1.B) were largely those with relatively few physicians (Figure 1.A). Exceptions are

observed for Camden, Dare, Graham, Martin, and Yancey counties whose population/nurse ratios were high but whose population/physician ratios were better than the county average.

Similarly as discussed for physicians, county needs for registered nurses must take into account the characteristics of county populations. In Figure 1.B, the 15 counties which had level-four population/nurse ratios included 10 counties identified as demographically high-risk according to criteria described on page 12.

County Population Per Hospital Bed

Short-term general hospitals are those which provide non-specialized care with the majority of hospitalizations being for periods of fewer than 30 days (9). The ratios of Figure 1.C are the county populations per patient bed in short-term general hospitals licensed by the North Carolina Division of Facility Services as of April, 1974. Similarly as explained in the case of physicians, since federal hospitals are not included but county populations include members of the armed forces, the ratios are biased upward for counties with large armed forces populations.

As shown in Figure 1.C, twelve North Carolina counties have no short-term general hospital, and an additional ten counties have population/bed ratios significantly higher than the average county ratio. Among the twelve counties with no hospital, nine are demographically high risk according to criteria described on page 12,

As previously discussed, the assessment of each county's health resource needs must involve more detailed analysis than that presented in this

section and should also include the county's mortality experience as examined in the remainder of this report. We would feel remiss, however, if we failed to note the following observations:

- The counties of Caswell, Currituck, Gates, Hyde, Jones, and Perquimans have no hospital and have population/physician and population/nurse ratios significantly higher than the average county ratios (Figures 1.A, 1.B, 1.C).
- All six counties may be regarded as high risk with respect to demographic correlates of disease and mortality (see pages 12, 13).
- Among these six counties, the 1971-73 mortality rates were high for Hyde, Gates, Currituck, and Perquimans, in that order (Figure 2.A and Table 2).

PRIMARY CARE PHYSICIANS

NORTH CAROLINA

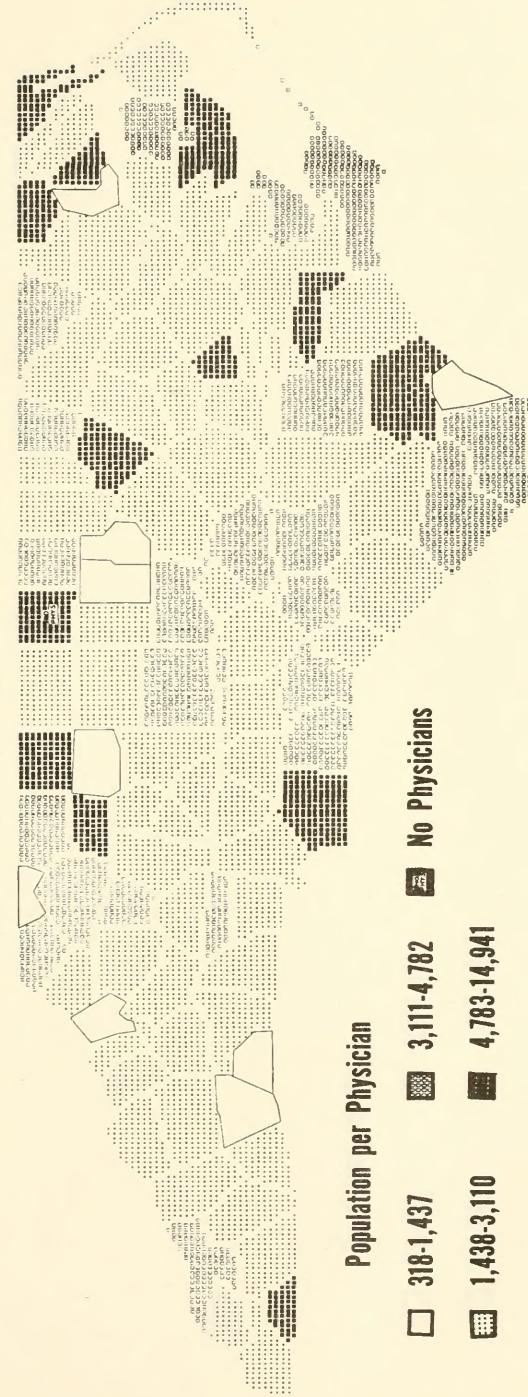


FIGURE 1.A

REGISTERED NURSES

NORTH CAROLINA

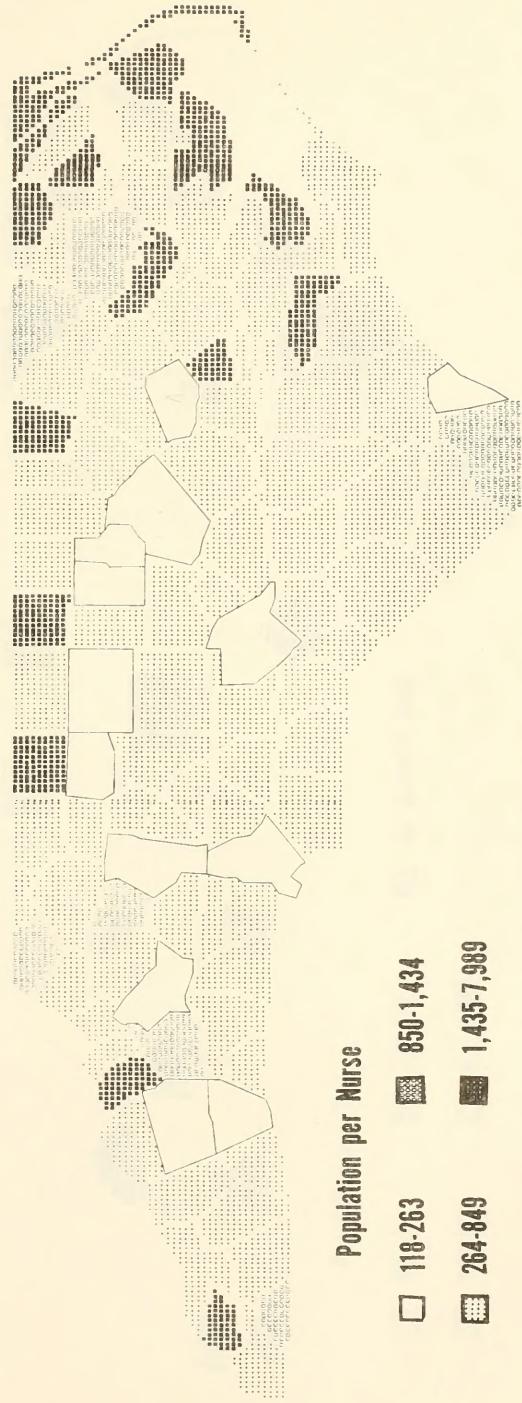


FIGURE 1.B

SHORT - TERM GENERAL HOSPITAL BEDS

NORTH CAROLINA

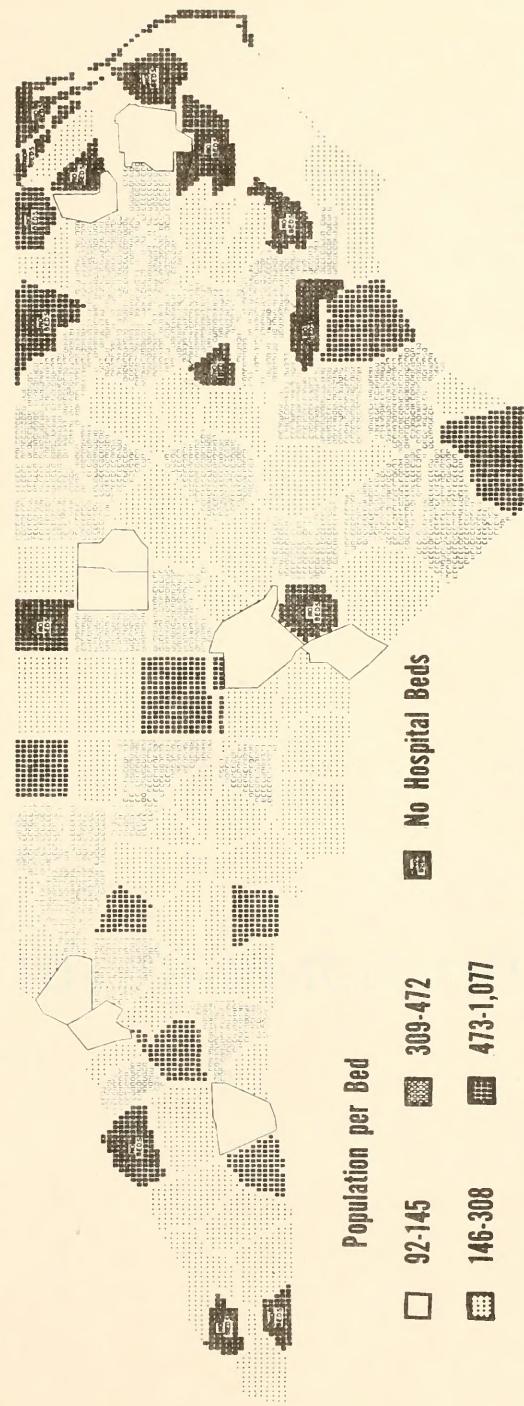


FIGURE 1.C

III. GENERAL MORTALITY

III. GENERAL MORTALITY IN NORTH CAROLINA

During 1973, a total of 47,704 North Carolinians died. This number represents an annual death rate of 9.1 resident deaths per one thousand population. The 1973 rate for the United States was higher at 9.4 (2).

Reflecting near-perfect counterbalance in the effects of changing age-specific death rates and age composition of the population, the United States death rate has remained stable in recent years (12). In contrast, the North Carolina death rate has risen by 10 percent since 1960 when a rate of 8.3 was recorded. This increase, actually dampened by the effects of compensating factors such as reductions in infant mortality, would appear to reflect the following major changes:

- An increasing "risk of death" due to changes in the age structure of the North Carolina population, viz., increasingly more people at older high-risk ages and fewer at young low-risk ages;
- An increase of 20 percent in the death rate for young people ages 15-24 years, from 122.5 per 100,000 in 1960 to 146.5 in 1973;
- An increase of 4 percent in the death rate for people 45-54 years of age, from 862.4 per 100,000 in 1960 to 896.2 in 1973.

Racial differences in North Carolina mortality remained high in 1973 but the gap has narrowed. While the white death rate (per 1,000 population) increased from 7.7 in 1960 to 8.7 in 1973, the nonwhite death rate changed from 10.2 to 10.6. On the other hand, sex differentials remained high and reductions

in the excess male mortality have not occurred. Between 1960 and 1973, the male death rate rose from 9.8 to 10.7 while the female death rate changed from 6.9 to 7.6. The 1973 North Carolina death rates for race-sex groups were 10.2 for white males, 7.3 for white females, 12.5 for nonwhite males, and 8.8 for nonwhite females.

The 1971-73 general mortality rates for counties, depicted in Figure 2.A, ranged from 4.3 per 1,000 population to 14.5 with an average county rate of 9.8 for the period. The higher rates were generally observed for residents of southcentral and northeastern portions of the State. To some extent, the high rates would appear to reflect unfavorable age, race, and sex composition of the county populations; to wit: among counties with level-four actual rates (Figure 2.A), the counties of Anson, Hyde, Northampton, Polk, and Warren had level-two adjusted rates (Figure 2.B); also, Clay, Pamlico and Perquimans counties had level-three actual rates corresponding to level-one adjusted rates. On the other hand, some counties with low (level-one) actual rates had notably higher (level-three) adjusted rates. This was true for Catawba, Craven, Cumberland, Onslow and Wayne, meaning that low mortality in these counties reflected favorable age, race, and sex factors and other conditions were not so favorable during 1971-73.

Altogether, adjustment for age, race and sex resulted in the identification of three major areas of unexplained high risk: a band of counties extending from Montgomery to Columbus, a band extending from Lee to Wilson, and the Bertie-Martin-Beaufort-Tyrrell area in the East. These counties, as well as Ashe County with a level-four adjusted rate and several counties with upper level-three adjusted rates, should investigate the determinants of their

respective mortality. Although not explained by age, race and sex factors, high mortality may be due to other demographic correlates (see discussion of county populations in Section II) or may be due to some other set of local conditions which invite intervention. The cause-specific data in the sections to follow will aid counties in the determination of their particular kinds of mortality proneness.

TABLE 2

MORTALITY STATISTICS FOR 1973 AND 1971-1973

NORTH CAROLINA RESIDENTS

GENERAL MORTALITY (PER 1000 POPULATION)

GEOGRAPHICAL AREA	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
NORTH CAROLINA	47704	9.12	8.95	8.95
DHR REGIONS				
EASTERN	10793	9.61	9.49	9.48
SOUTH CENTRAL	10184	8.73	8.57	9.31
NORTH CENTRAL	10476	9.10	8.84	8.70
WESTERN	16251	9.07	8.93	8.75
COUNTIES				
ALAMANCE	875	8.72	8.40	8.50
ALEXANDER	185	8.94	8.22	8.41
ALLEGHANY	99	11.78	12.28	9.63
ANSON	265	11.29	11.64	8.90
ASHE	224	11.59	10.18	10.05
AVERY	133	9.88	9.86	8.18
BEAUFORT	439	12.25	12.56	10.39
BERTIE	278	13.31	12.92	10.55
BLADEN	332	12.44	11.08	9.91
BRUNSWICK	237	8.47	8.59	8.41
BUNCOMBE	1680	11.44	10.93	9.06
BURKE	484	7.78	7.84	7.93
CABARUS	703	9.17	8.90	8.80
CALDWELL	482	8.20	8.22	9.58
CAMDEN	50	8.97	10.14	8.66
CARTERET	344	10.48	9.72	9.33
CASWELL	200	10.51	9.66	8.88
CATAWBA	751	7.90	8.00	9.22
CHATHAM	296	9.98	9.85	8.70
CHEROKEE	181	10.80	10.70	8.72
CHOWAN	122	11.22	11.05	9.11
CLAY	55	10.38	10.19	5.45
CLEVELAND	704	9.45	9.39	9.55
COLUMBUS	517	10.72	10.70	10.39
CRAVEN	506	7.84	7.49	9.32
CUMBERLAND	1228	5.69	5.66	9.92
CURRITUCK	81	10.13	10.91	8.65
DARE	89	11.60	11.37	9.20
DAVIDSON	801	8.10	8.08	8.64
DAVIE	186	9.63	8.94	7.93
DUPLIN	400	10.52	10.48	9.56
DURHAM	1225	9.03	8.80	8.53
EDGECOMBE	552	10.41	10.25	9.71
FORSYTH	1940	8.76	8.80	9.08
FRANKLIN	299	10.80	10.57	8.78
GASTON	1293	8.53	8.61	9.28
GATES	112	13.33	12.01	9.05
GRAHAM	59	9.64	9.45	8.06
GRANVILLE	359	10.98	10.15	9.37
GREENE	124	8.29	8.68	9.28
GUILFORD	2457	8.25	8.11	8.40
HALIFAX	595	11.11	10.73	9.39
HARNETT	551	10.72	10.68	10.89

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

MORTALITY STATISTICS FOR 1973 AND 1971-1973, NORTH CAROLINA RESIDENTS
GENERAL MORTALITY (PER 1000 POPULATION) CONT'D.

COUNTIES (CONT'D)	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
HAYWOOD	377	8.77	8.95	7.45
HENDERSON	528	11.94	11.18	8.83
HERTFORD	216	9.30	10.14	8.14
HOKE	150	8.77	8.76	8.88
HYDE	51	9.58	13.17	8.84
IREDELL	683	8.99	9.31	8.82
JACKSON	195	8.75	8.31	8.15
JOHNSTON	664	10.56	11.08	10.79
JONES	97	10.09	9.41	9.08
LEE	332	10.36	10.30	10.26
LENOIR	523	9.18	9.11	9.46
LINCOLN	320	9.18	8.82	9.39
MCDOWELL	319	10.28	9.63	8.91
MACON	162	9.51	10.23	6.67
MADISON	185	11.76	10.99	7.52
MARTIN	277	11.47	11.47	10.56
MECKLENBURG	2786	7.62	7.58	8.56
MITCHELL	138	10.31	9.98	8.27
MONTGOMERY	244	12.73	11.85	9.99
MOREE	474	11.52	11.33	9.58
NASH	667	11.00	10.63	9.96
NEW HANOVER	916	10.28	9.85	9.81
NORTHAMPTON	269	11.59	11.41	8.98
ONSLOW	421	4.24	4.32	9.48
ORANGE	388	6.11	6.03	7.59
PAMLICO	105	11.22	9.83	7.70
PASQUOTANK	288	10.52	10.26	8.95
PENDER	179	9.90	10.77	8.88
PERQUIMANS	97	11.56	10.75	7.33
PERSON	252	9.59	9.08	8.74
PITT	711	9.48	9.22	9.89
POLK	159	13.31	12.97	8.69
RANDOLPH	670	8.45	8.31	8.73
RICHMOND	440	10.85	11.24	10.57
ROBESON	940	10.78	10.27	10.68
ROCKINGHAM	832	11.14	10.66	9.81
ROWAN	908	10.06	9.69	8.42
RUTHERFORD	501	10.20	10.02	8.77
SAMPSON	509	10.81	10.47	9.59
SCOTLAND	321	11.49	10.27	11.02
STANLY	472	10.77	9.96	9.65
STOKES	230	9.00	8.34	7.99
SURRY	530	9.94	9.65	9.14
SWAIN	96	10.11	11.19	9.93
TRANSYLVANIA	157	7.91	7.60	8.20
TYRRELL	49	12.58	14.46	10.44
UNION	479	8.22	8.24	8.68
VANCE	370	11.74	10.88	9.24
WAKE	1825	7.46	7.24	8.39
WARREN	218	12.85	11.63	8.62
WASHINGTON	127	9.30	9.59	9.15
WATAUGA	184	7.49	7.81	7.41
WAYNE	722	8.20	8.16	9.21
WILKES	431	8.25	8.31	8.31
WILSON	632	11.04	10.83	10.60
YADKIN	257	9.87	8.34	7.41
YANCEY	138	10.49	9.50	8.21

* SEE SECTION I

** AGE-RACE-SEX ADJUSTED (SEE SECTION I)

GENERAL MORTALITY

NORTH CAROLINA 1971-1973

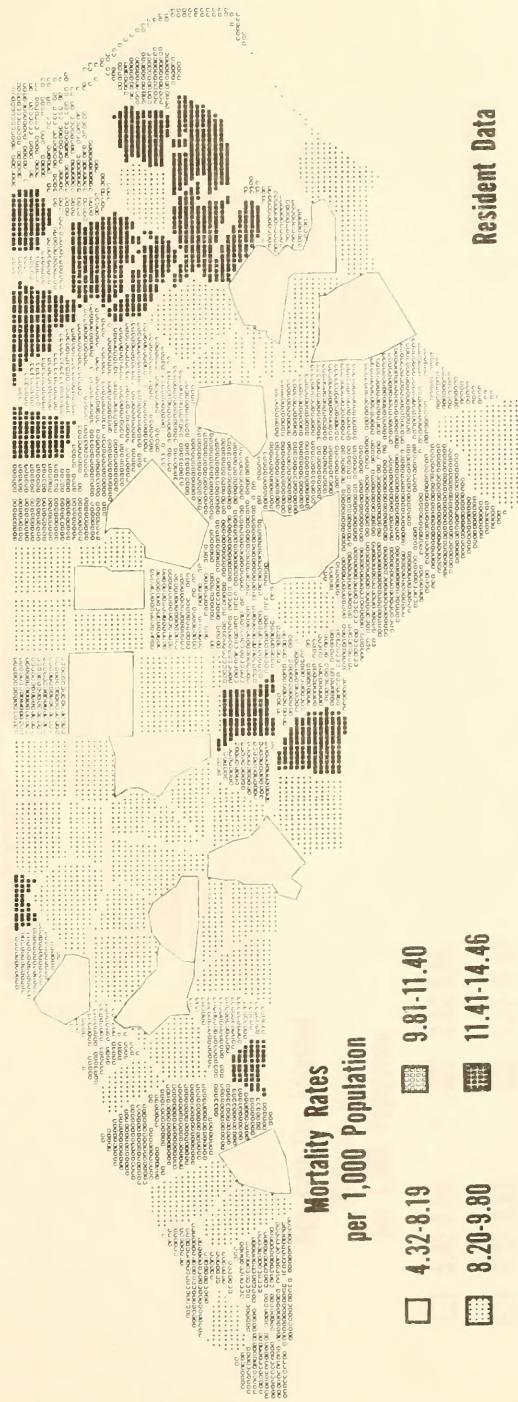


FIGURE 2.A

GENERAL MORTALITY

NORTH CAROLINA 1971 - 1973

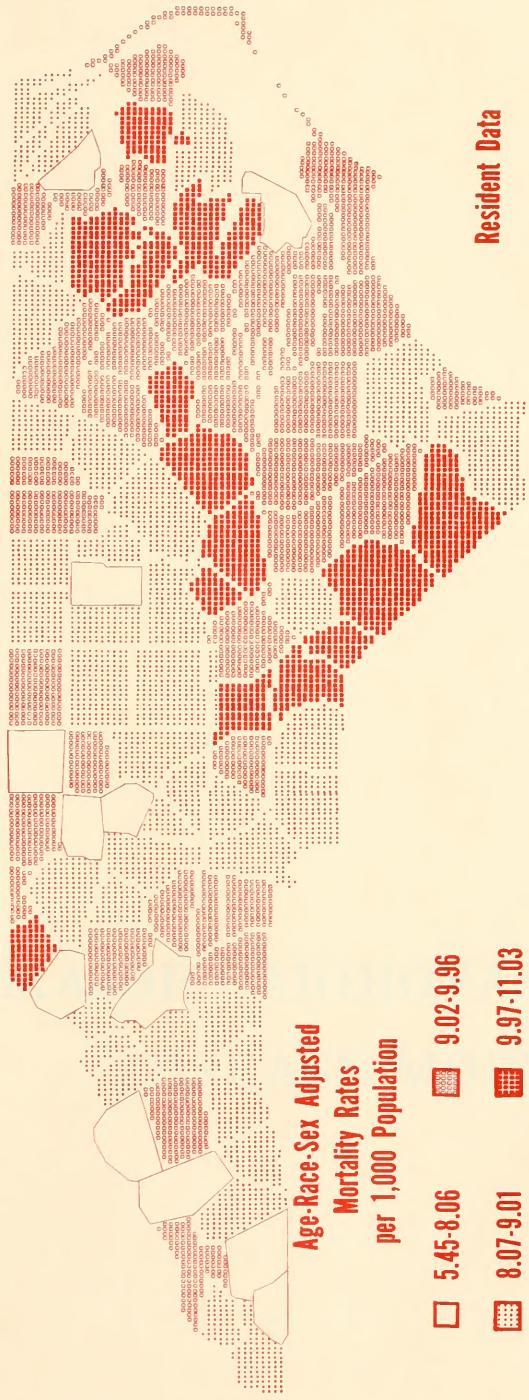


FIGURE 2.B

IV. MAJOR CARDIOVASCULAR DISEASE MORTALITY

HEART DISEASE

During 1973, over 35 percent of all deaths in the United States and North Carolina were due to heart disease which has been the leading cause of death in the State and the Nation over the past 45 years (13). A total of 17,317 deaths in North Carolina resulted in a State rate of 331.2 deaths per 100,000 population; the rate for the United States was slightly higher at 360.8 (2).

As depicted in Figure 3.A, major high-risk counties during 1971-73 are located in the northeastern and southwestern areas of the State as well as the South Central Region. The adjustment for age, race and sex had the greatest downward impact on Western counties (Figure 3.B). Clay, Macon, Madison and Polk, as well as Hyde and Perquimans in the East, had adjusted rates well below their actual rates indicating an unfavorable age-race-sex population distribution. The opposite was true for Caldwell, Craven, Cumberland, Greene, Onslow and Scotland counties whose adjusted rates represented a marked increase over the actual rate. All counties with significantly high adjusted rates (Figure 3.B) had conditions other than age, race and sex factors contributing to high heart disease mortality during 1971-73.

Of the 17,317 heart disease deaths in North Carolina during 1973, a total of 15,715 were from ischemic heart disease. Acute myocardial infarction (popularly called heart attack) accounted for 9,096 of these deaths and the remaining 6,619 were due to other types of ischemic heart disease, usually chronic. Comparisons of the death rates for these two forms of heart disease

TABLE 3

MORTALITY STATISTICS FOR 1973 AND 1971-1973

NORTH CAROLINA RESIDENTS

HEART DISEASE

GEOGRAPHICAL AREA	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
NORTH CAROLINA	17317	331.23	323.39	323.39
DHR REGIONS				
EASTERN	3779	336.75	333.25	345.43
SOUTH CENTRAL	3601	309.01	300.66	341.43
NORTH CENTRAL	3854	335.06	324.92	317.00
WESTERN	6083	339.76	330.97	314.34
COUNTIES				
ALAMANCE	299	298.25	308.80	310.13
ALEXANDER	66	319.07	303.53	305.08
ALLEGHANY	33	392.95	448.23	357.77
ANSON	101	430.31	397.58	292.18
ASHE	95	491.54	392.29	399.66
AVERY	63	468.19	425.52	373.73
BEAUFORT	143	399.31	404.02	322.84
BERTIE	107	512.64	521.77	437.39
BLADEN	110	412.32	371.67	336.84
BRUNSWICK	92	329.01	303.84	301.77
BUNCOMBE	591	402.67	391.26	292.81
BURKE	174	279.81	281.21	265.10
CABARRUS	261	340.76	347.31	337.00
CALDWELL	196	333.65	324.64	380.31
CAMDEN	19	341.17	438.01	381.74
CARTERET	145	441.81	407.47	363.66
CASWELL	77	404.68	341.94	322.86
CATAWBA	276	290.53	290.72	324.77
CHATTHAM	110	370.91	373.78	321.18
CHEROKEE	73	435.74	455.57	336.70
CHOWAN	20	183.97	267.20	241.31
CLAY	25	472.14	465.52	234.82
CLFVELAND	299	401.41	407.84	416.04
COLUMBUS	195	404.67	428.01	419.64
CRAVEN	186	288.54	252.38	340.61
CUMBERLAND	369	171.17	168.30	349.82
CURRITUCK	39	488.17	472.10	357.65
DARE	24	312.94	351.49	230.46
DAVIDSON	322	325.66	313.56	333.65
DAVIE	63	326.27	321.80	266.78
DUPLIN	121	318.27	340.57	316.68
DURHAM	426	314.25	303.89	300.28
EDGECOMBE	178	335.95	325.99	321.59
FORSYTH	738	333.35	338.34	350.91
FRANKLIN	110	397.35	421.60	339.24
GASTON	507	334.69	332.97	355.62
GATES	42	500.23	450.57	334.38
GRAHAM	19	310.71	334.75	275.29
GRANVILLE	149	455.75	378.59	356.74
GREENE	40	267.71	329.40	381.30
GUILFORD	858	288.44	275.55	287.84
HALIFAX	191	356.78	334.90	300.13
HARNETT	209	406.70	414.02	428.56

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

MORTALITY STATISTICS FOR 1973 AND 1971-1973, NORTH CAROLINA RESIDENTS
HEART DISEASE CONT'D.

COUNTIES (CONT'D)	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
HAYWOOD	136	316.68	301.49	233.70
HENDERSON	193	436.65	403.20	290.16
HERTFORD	90	387.56	432.58	346.34
HOKE	51	298.28	301.98	342.57
HYDE	19	357.07	379.97	239.34
IREDELL	260	342.26	348.50	320.64
JACKSON	90	404.20	347.47	318.17
JOHNSTON	300	477.38	448.05	429.19
JONES	39	405.91	321.91	330.14
LEE	124	386.96	399.59	398.81
LENOIR	185	324.94	326.02	353.40
LINCOLN	111	318.68	321.30	336.58
MCDOWELL	95	306.30	285.99	255.38
MACON	69	405.23	466.98	281.75
MAISON	68	432.29	416.88	247.17
MARTIN	106	439.17	424.37	405.82
MECKLENBURG	988	270.54	268.98	315.81
MITCHELL	35	261.66	308.10	224.65
MONTGOMERY	104	542.96	506.44	406.04
MOORE	174	423.19	416.48	337.74
NASH	228	376.23	384.44	360.66
NEW HANOVER	293	329.08	319.75	321.00
NORTHAMPTON	112	482.94	423.53	342.77
ONSLOW	109	109.97	111.44	329.45
ORANGE	124	195.35	198.41	257.19
PAMLICO	30	320.75	326.76	246.38
PASQUOTANK	116	423.96	425.82	381.39
PENDER	60	332.02	297.95	261.48
PERQUIMANS	45	536.28	433.15	291.03
PERSON	96	365.43	365.62	352.46
PITT	296	394.90	368.40	408.71
POLK	66	552.81	493.86	292.97
RANOLPH	245	309.03	301.76	309.81
RICHMOND	162	399.66	406.66	382.54
ROBESON	276	316.72	319.43	365.24
ROCKINGHAM	321	429.94	410.38	364.87
ROWAN	351	388.99	359.78	297.65
RUTHERFORD	195	397.35	367.43	292.00
SAMPSON	224	475.73	448.82	409.79
SCOTLAND	110	393.99	344.88	388.37
STANLY	180	411.08	367.10	353.08
STOKES	89	348.33	326.50	292.67
SURRY	202	379.20	351.91	313.30
SWAIN	31	326.55	355.08	312.82
TRANSYLVANIA	47	236.99	240.65	257.03
TYRRELL	15	385.20	410.78	303.91
UNION	179	307.40	287.24	302.62
VANCE	120	380.91	381.51	338.63
WAKE	627	256.37	246.30	296.56
WARREN	79	465.69	410.16	294.08
WASHINGTON	47	344.32	377.14	384.56
WATAUGA	77	313.54	319.90	289.79
WAYNE	246	279.49	298.88	361.17
WILKES	192	367.63	318.24	312.19
WILSON	201	351.16	352.73	359.81
YADKIN	86	330.29	299.47	246.92
YANCEY	42	319.34	307.52	241.63

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

HEART DISEASE

NORTH CAROLINA 1971 - 1973

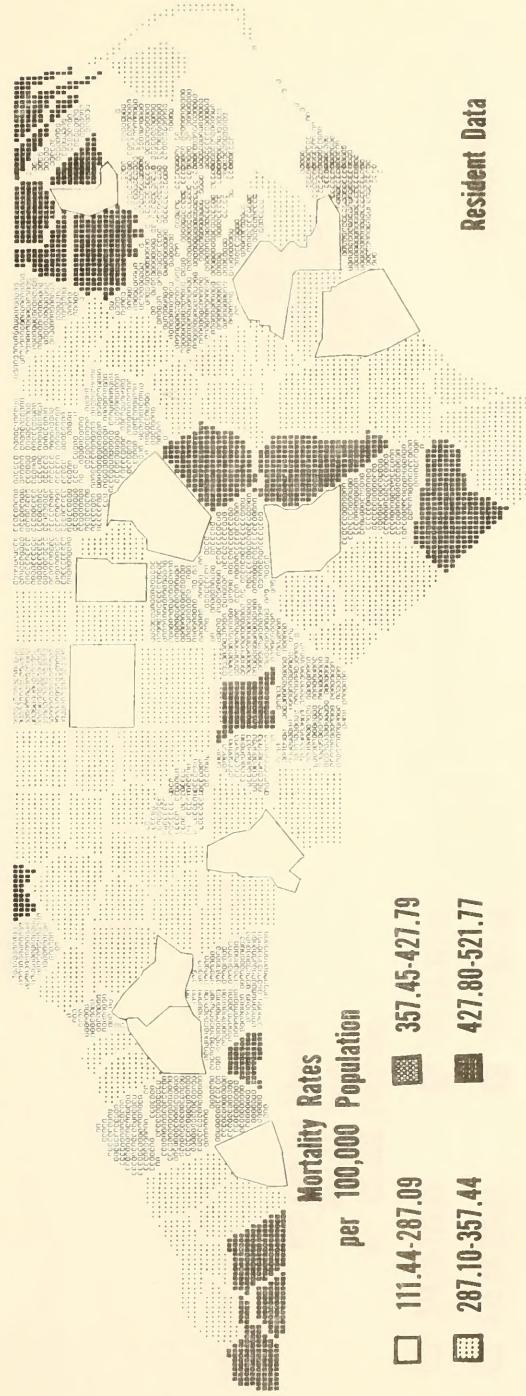


FIGURE 3.A

HEART DISEASE

NORTH CAROLINA 1971 - 1973

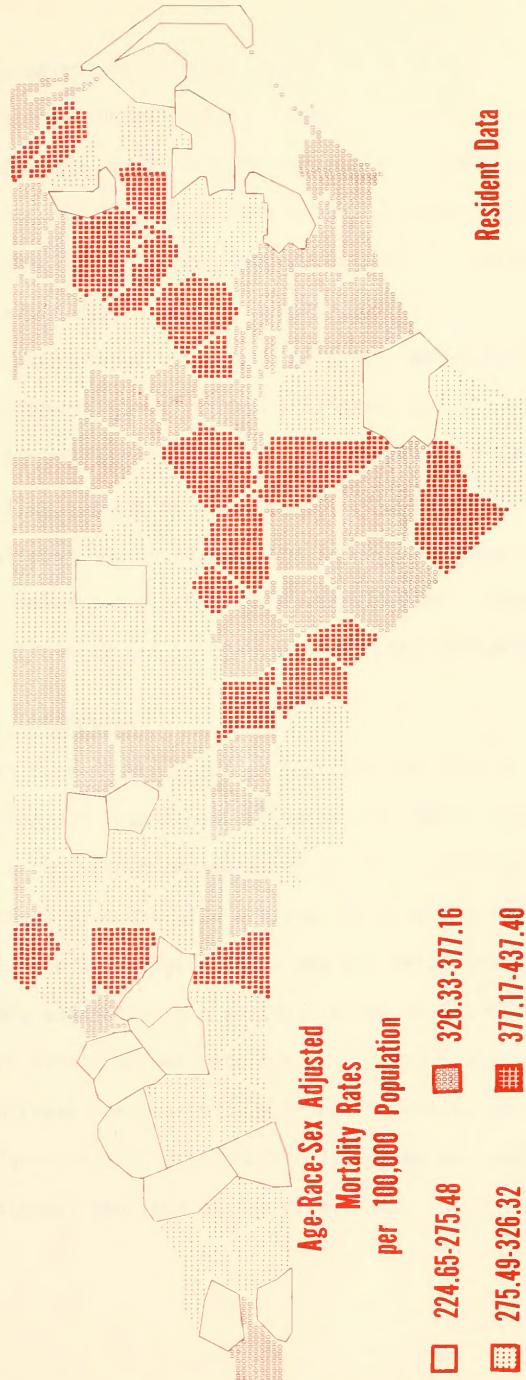


FIGURE 3.B

reveal that white males die of heart attack nearly twice as often as they die of chronic ischemic heart disease. Nonwhite females, on the other hand, are slightly more prone to die from chronic ischemic heart disease. Below age 65, death rates are 2 to four times higher for heart attack, but rates for chronic ischemic heart disease increase rapidly thereafter and account for more deaths after age 75 than do heart attacks.

Due to discontinuity in cause of death coding procedures, present mortality levels for categories of heart disease can only be compared to levels observed in 1968 and later years. In general, acute myocardial infarction mortality remains at 1968 levels while mortality due to other ischemic heart disease has increased, the largest percentage increase occurring among white males and persons 45-54 years of age. These two categories of heart disease are examined in more detail in the following sections.

Acute Myocardial Infarction

Certain factors are known to increase the risk of heart attack. For example, a study of Framingham, Massachusetts males ages 30-62 revealed that a man with a cholesterol measurement of 250 or more had three times the risk of heart attack as a man with a blood cholesterol count of 194; men who smoked more than a pack of cigarettes a day had twice the risk of heart attack as nonsmoking men; and men with a systolic blood pressure over 150 had double the risk of heart attack as men with systolic blood pressure under 120. Other factors which increase the possibility of heart attack are: increasing age, sex (men have higher rates), atherosclerosis, diabetes, electrocardiogram abnormalities, stress, and lack of exercise. (14)

Many persons die within minutes after the onset of heart attack symptoms. Thereafter, in general, mortality rates decline with the passage of each hour and day. Mortality estimates for those who reach a hospital generally range from 25 to 35 percent, but Coronary Care Units (CCUs) are reducing these figures. If an individual survives the first three weeks, he is well on his way to convalescence and relatively free from hazard. In the average case, healing is almost complete in six weeks. Of those who survive the first month, well over one-half will still be alive in five years. (15)

During 1973, a total of 9,096 North Carolinians succumbed to heart attacks. The resulting death rate was 174.0 per 100,000 population, virtually unchanged from the rate observed in 1968. The rates for white females and nonwhite males showed some increase (8 percent and 3 percent respectively); otherwise, rates for race, sex, and age groups have declined slightly or remained unchanged in recent years. The 1973 rates for race-sex groups were 248.0 for white males, 123.5 for white females, 169.8 for non-white males and 108.5 for nonwhite females. Age-specific rates increased rapidly after age 35.

In Figure 4.A, no single area of the State stands out as either high-risk or low-risk, although more counties with level-four rates are located in the Eastern Region. Age, race and sex adjustment (Figure 4.B) had the general effect of reducing death rates in the Western part of the State; Clay, Madison and Polk; as well as Gates County in the East. Conversely, Greene and Onslow counties had big adjustment increases, meaning that lower

TABLE 4

MORTALITY STATISTICS FOR 1973 AND 1971-1973

NORTH CAROLINA RESIDENTS

ACUTE MYOCARDIAL INFARCTION

GEOGRAPHICAL AREA	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
NORTH CAROLINA	9096	173.98	170.24	170.24
DHR REGIONS				
EASTERN	2007	178.85	175.35	186.89
SOUTH CENTRAL	1830	157.04	154.84	178.77
NORTH CENTRAL	2165	188.22	178.75	173.49
WESTERN	3094	172.81	171.55	156.32
COUNTIES				
ALAMANCE	174	173.56	172.34	168.79
ALEXANDER	37	178.87	186.03	188.25
ALLEGHANY	22	261.96	308.16	258.95
ANSON	54	230.07	191.01	150.38
ASHE	51	263.87	225.14	312.61
AVERY	41	304.69	252.80	256.60
BEAUFORT	72	201.05	226.10	186.70
BERTIE	57	273.09	287.21	252.79
BLADEN	68	254.89	220.75	207.16
BRUNSWICK	41	146.62	151.92	149.52
BUNCOMBE	268	182.60	183.93	135.68
BURKE	102	164.02	176.90	170.43
CABARRUS	156	203.67	206.81	191.29
CALDWELL	102	173.63	172.07	191.42
CAMDEN	8	143.65	210.00	175.47
CARTERET	82	249.85	228.76	197.39
CASWELL	45	236.50	165.73	161.90
CATAWBA	165	173.69	183.42	197.50
CHATHAM	52	175.34	202.56	177.18
CHEROKEE	42	250.70	221.79	162.49
CHOWAN	13	119.58	165.85	155.25
CLAY	19	358.82	333.41	171.41
CLEVELAND	150	201.37	227.47	230.03
COLUMBUS	85	176.39	177.29	177.67
CRAYEN	99	153.58	136.58	180.18
CUMBERLAND	189	87.67	77.76	163.27
CURRITUCK	21	262.86	255.54	195.76
DARE	11	143.43	237.25	152.60
DAVIDSON	208	210.36	197.50	209.77
DAVIE	43	222.69	186.85	153.29
DUPLIN	93	244.62	243.39	231.46
DURHAM	208	153.44	151.57	152.90
EDGECOMBE	95	179.30	167.11	167.17
FORSYTH	457	206.42	190.99	199.35
FRANKLIN	64	231.18	263.35	217.50
GASTON	254	167.67	164.16	167.35
GATES	25	297.76	241.09	174.29
GRAHAM	12	196.23	180.65	158.66
GRANVILLE	76	232.46	196.38	192.78
GREENE	13	87.00	141.48	178.39
GUILFORD	445	149.59	141.44	147.48
HALIFAX	114	212.94	193.49	182.42
HARNETT	100	194.59	211.91	218.05

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

MORTALITY STATISTICS FOR 1973 AND 1971-1973, NORTH CAROLINA RESIDENTS
ACUTE MYOCARDIAL INFARCTION CONT'D.

COUNTIES (CONT'D)	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
HAYWOOD	78	181.62	168.71	131.93
HENDERSON	100	226.24	217.86	149.03
HERTFORD	40	172.25	206.26	181.67
HOKE	32	187.15	166.67	192.70
HYDE	17	319.48	269.65	179.05
IREDELL	137	180.34	183.14	164.61
JACKSON	50	224.55	187.21	171.89
JOHNSTON	104	165.49	176.99	164.75
JONES	22	228.97	178.08	176.75
LEE	76	237.17	228.79	227.98
LENOIR	96	168.62	172.11	193.72
LINCOLN	70	200.97	200.93	184.37
MCDOWELL	53	170.88	155.90	131.88
MACON	38	223.17	256.34	177.60
MADISON	31	197.07	201.11	126.82
MARTIN	36	149.15	154.69	151.78
MECKLENBURG	394	107.88	109.90	129.35
MITCHELL	15	112.14	162.67	90.61
MONTGOMERY	59	308.02	323.22	265.53
MOOKE	105	255.37	257.74	209.79
NASH	131	216.16	226.69	216.65
NEW HANOVER	168	188.68	167.65	169.58
NORTH THAMPTON	51	219.91	177.06	167.06
ONSLOW	71	71.63	72.62	208.53
ORANGE	69	108.70	101.62	136.01
PAMLICO	13	138.99	149.17	111.13
PASQUOTANK	59	215.63	218.40	210.14
PENDEP	45	249.01	198.63	178.46
PERQUIMANS	23	274.10	204.76	143.38
PERSON	50	190.33	175.19	168.60
PITT	139	185.44	169.96	194.55
POLK	29	242.90	198.10	118.48
RANDOLPH	129	162.71	163.36	162.06
RICHMOND	88	217.10	229.31	215.12
ROBESON	128	146.88	150.29	185.26
ROCKINGHAM	172	230.37	236.81	208.84
ROWAN	209	231.62	213.00	171.16
PUTNAM	93	189.50	185.75	146.51
SAMPSON	108	229.37	204.85	189.02
SCOTLAND	48	171.92	174.85	209.84
STANLY	103	235.22	230.01	206.17
STOKES	48	187.86	163.91	132.51
SUPPY	115	215.88	194.24	164.20
SWAIN	21	221.21	197.26	160.82
TRANSYLVANIA	27	136.14	129.58	128.70
TYRRELL	6	154.08	179.71	141.04
UNION	86	147.69	133.46	138.46
VANCE	52	165.06	186.56	172.71
WAKE	342	139.84	139.91	168.60
WARREN	48	282.95	253.63	179.90
WASHINGTON	19	139.19	157.14	159.37
WATAUGA	48	195.45	208.27	197.64
WAYNE	125	142.01	148.87	189.65
WILKES	66	126.37	114.67	98.42
WILSON	117	204.40	198.34	206.45
YADKIN	39	149.78	152.98	124.25
YANCEY	25	190.08	170.28	126.75

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

ACUTE MYOCARDIAL INFARCTION

NORTH CAROLINA 1971 - 1973

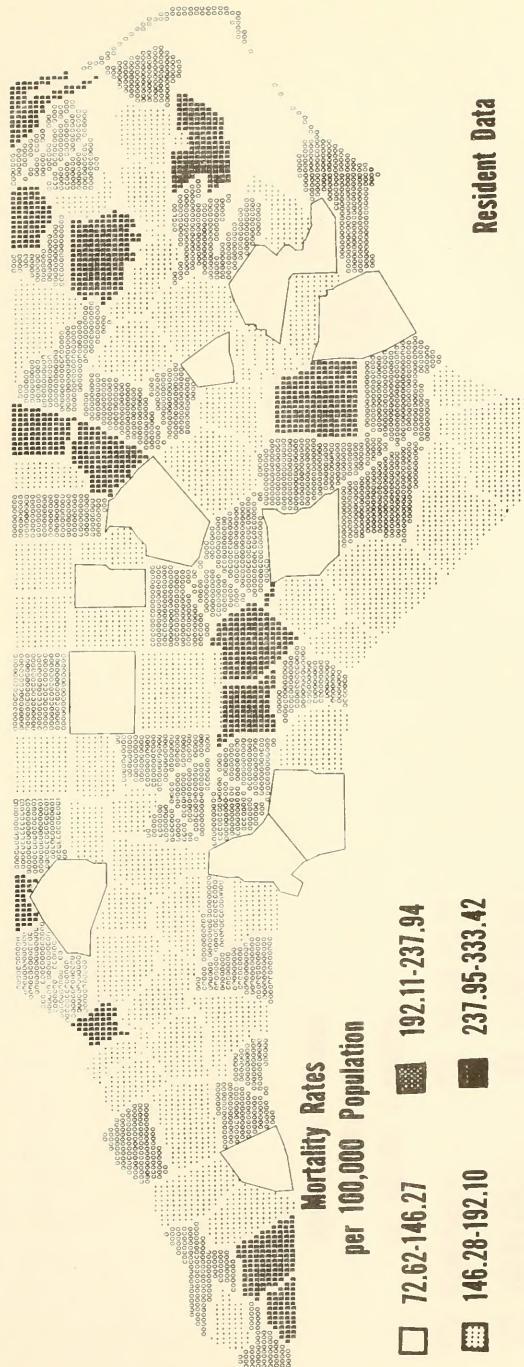


FIGURE 4.A

ACUTE MYOCARDIAL INFARCTION

NORTH CAROLINA 1971 - 1973

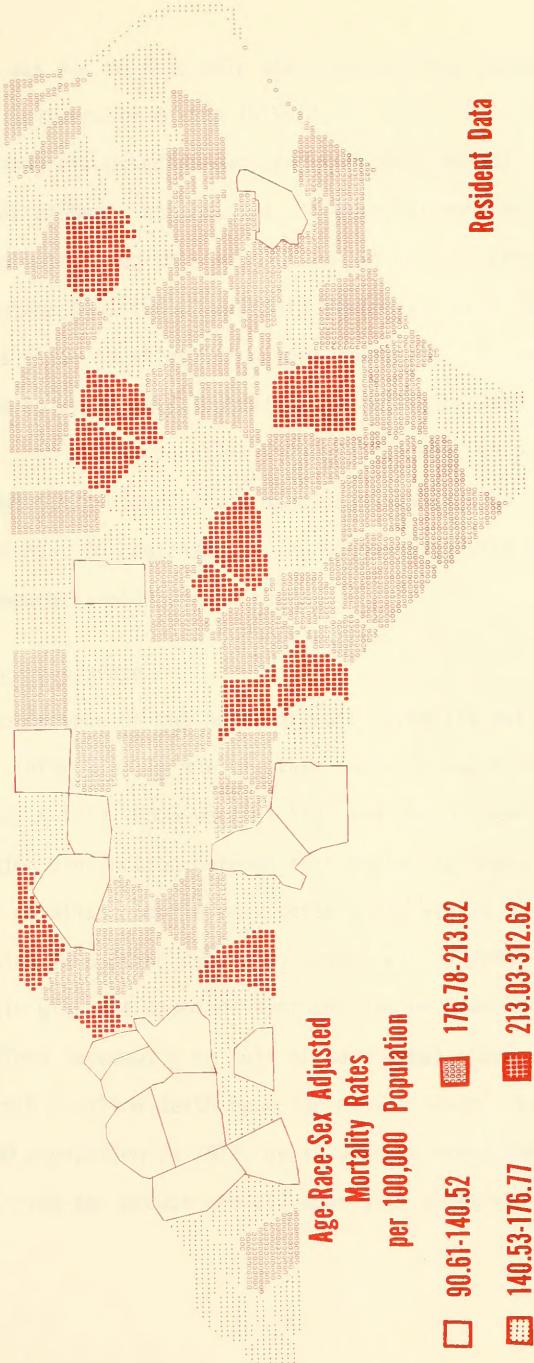


FIGURE 4.B

actual mortality was due to favorable age, race and sex factors with other conditions being unfavorable during 1971-73.

As already discussed, prompt and efficient medical service is essential in cases of heart attack, and the establishment of CCUs has been a great factor in fulfilling this need (15). In 1974, according to sources in the North Carolina Division of Facility Services, approximately 400 CCU beds were located in 62 counties throughout the State. A preponderance of the CCU beds were in northcentral portions of the State with relatively few in the northeast. Of the 38 counties with no CCU beds, 26 percent had significantly high (level-four) acute myocardial infarction rates during 1971-73 (Figure 3.A). In contrast, of the 62 counties with CCU beds, only 5 percent had comparably high actual rates.

Other Ischemic Heart Disease

A preponderance of the heart disease mortality not attributed to acute myocardial infarction is due to other ischemic heart disease. Among 6,619 such deaths in 1973, 98.5 percent involved chronic ischemic heart disease. The major distinction between this and acute myocardial infarction is the length of duration. While many persons die within minutes of the onset of acute myocardial infarction symptoms, people with chronic ischemic heart disease seldom die with the onset of symptoms and may continue to lead productive lives before succumbing to this or some other cause of death (15).

The North Carolina death rate for other ischemic heart disease was 126.6 per 100,000 population in 1973, up 18 percent since 1968. The increase has involved all race-sex groups and all ages with greatest percentage increases

occurring among white males and persons 45-54 years of age. In 1973, the death rates were 127.4 for white males, 117.1 for white females, 145.5 for nonwhite males and 138.5 for nonwhite females. The death rate for persons over age 75 was higher than the acute myocardial infarction death rate for this age group.

Counties with 1971-73 rates greater than the county average of 129.7 are spread throughout the State but form three fairly distinct bands (Figure 5.A). The northern band begins with Stokes County and extends along the Virginia border to the coast to include most northeastern counties. The western band consists of Madison, Buncombe, Henderson, and Polk with an extension eastward to Mecklenburg. The southern band begins with Anson and Montgomery counties and extends eastward to Johnston and Sampson. The only cluster of level-one rates consists of Duplin, Onslow and Pender counties. Adjustment for age, race and sex (Figure 5.B) resulted in sizeable rate reductions for some counties including Ashe, Macon and Madison counties, but increases for others as in the case of Caldwell and Cumberland. All counties with level-four adjusted rates had conditions other than age, race and sex factors contributing to high mortality during 1971-73.

TABLE 5

MORTALITY STATISTICS FOR 1973 AND 1971-1973

NORTH CAROLINA RESIDENTS

OTHER ISCHEMIC HEART DISEASE

GEOGRAPHICAL AREA	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
NORTH CAROLINA	6619	126.60	121.76	121.76
DHR REGIONS				
EASTERN	1367	121.81	118.93	121.83
SOUTH CENTRAL	1441	123.65	116.78	131.36
NORTH CENTRAL	1394	121.19	119.63	117.33
WESTERN	2417	135.00	128.13	126.90
COUNTIES				
ALAMANCE	106	105.73	109.97	113.94
ALEXANDER	26	125.69	99.54	100.76
ALLEGHANY	4	47.63	56.02	36.38
ANSON	40	170.42	165.54	112.95
ASHE	41	212.13	144.97	74.41
AVERY	20	148.63	152.68	103.62
BEAUFORT	50	139.62	119.54	93.72
BERTIE	38	182.06	173.92	139.63
BLADEN	29	108.70	111.00	96.63
BRUNSWICK	34	121.59	104.98	105.33
BUNCOMBE	279	190.09	171.22	125.38
BURKE	60	96.48	87.64	78.85
CABARRUS	68	88.78	105.58	108.93
CALDWELL	77	131.07	125.61	155.30
CAMDEN	10	179.56	198.00	182.77
CARTERET	57	173.67	153.18	136.58
CASWELL	26	136.64	150.03	137.87
CATAWBA	76	80.00	82.50	98.94
CHATHAM	36	121.39	116.38	98.84
CHEROKEE	27	161.16	197.81	153.58
CHOWAN	4	36.79	67.56	61.84
CLAY	5	94.42	119.52	56.47
CLEVELAND	139	186.60	162.41	167.89
COLUMBUS	59	122.43	138.51	139.20
CRAVEN	65	100.83	92.43	131.15
CUMBERLAND	149	69.11	64.20	138.92
CURRITUCK	18	225.30	203.56	150.23
DARE	8	104.31	83.47	59.65
DAVIDSON	88	89.00	92.30	99.36
DAVIE	16	82.86	114.18	93.80
DUPLIN	23	60.49	83.17	73.96
DURHAM	174	128.35	120.86	118.65
EDGECOMBE	65	122.68	119.63	119.12
FORSYTH	234	105.69	122.93	126.46
FRANKLIN	38	137.26	117.18	91.19
GASTON	215	141.93	142.07	159.90
GATES	14	166.74	166.00	130.41
GRAHAM	6	98.11	132.83	91.64
GRANVILLE	60	183.52	153.86	142.11
GREENE	8	53.54	81.79	99.39
GUILFORD	348	116.98	111.07	116.41
HALIFAX	62	115.81	115.97	98.65
HARNETT	85	165.40	166.13	173.77

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

MORTALITY STATISTICS FOR 1973 AND 1971-1973, NORTH CAROLINA RESIDENTS
OTHER ISCHEMIC HEART DISEASE CONT'D.

COUNTIES (CONT'D)	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
HAYWOOD	46	107.11	102.31	75.73
HENDERSON	85	192.30	160.37	118.65
HERTFORD	38	163.63	148.96	109.88
HOKE	14	81.88	111.77	128.40
HYDE	1	18.79	67.41	38.23
IREDELL	107	140.85	138.69	130.05
JACKSON	38	170.66	143.78	125.20
JOHNSTON	180	286.42	221.10	217.26
JONES	16	166.52	130.13	133.92
LEE	42	131.06	149.71	149.93
LENOIR	75	131.73	125.12	133.68
LINCOLN	35	100.48	92.21	116.02
MCDOWELL	34	109.62	105.36	95.29
MACON	23	135.07	151.02	72.73
MADISON	28	178.00	171.78	94.96
MARTIN	47	194.72	160.16	167.86
MECKLENBURG	512	140.19	135.00	159.16
MITCHELL	16	119.61	101.05	107.03
MONTGOMERY	33	172.28	153.83	115.79
MOORE	63	153.22	130.92	104.16
NASH	77	127.06	125.75	115.07
NEW HANOVER	99	111.19	119.10	119.35
NORTHAMPTON	47	202.66	189.80	138.32
ONSLOW	32	32.28	30.45	99.71
ORANGE	41	64.59	77.43	96.50
PAMLICO	15	160.37	134.96	97.60
PASQUOTANK	49	179.08	183.01	149.21
PENDER	12	66.40	66.21	57.32
PERQUIMANS	19	226.43	204.76	131.21
PERSON	36	137.03	151.07	150.51
PITT	126	168.10	146.82	164.02
POLK	30	251.27	248.32	147.43
RANDOLPH	90	113.52	105.38	114.09
RICHMOND	57	140.62	140.22	133.17
ROBESON	131	150.32	152.22	165.03
ROCKINGHAM	126	168.76	148.00	132.78
ROWAN	107	118.58	114.77	99.31
RUTHERFORD	85	173.20	142.89	111.66
SAMPSON	96	203.88	209.83	189.79
SCOTLAND	41	146.85	129.03	139.28
STANLY	64	146.16	115.00	124.18
STOKES	34	133.07	130.86	120.54
SURRY	71	133.28	126.13	125.32
SWAIN	7	73.73	118.36	109.04
TRANSYLVANIA	19	95.80	87.51	90.41
TYRRELL	9	231.12	213.94	151.01
UNION	62	106.47	91.10	98.72
VANCE	60	190.45	163.50	139.36
WAKE	230	94.04	84.08	102.19
WARREN	25	147.37	130.77	101.31
WASHINGTON	17	124.54	142.63	151.95
WATAUGA	18	73.29	70.78	58.69
WAYNE	105	119.29	126.08	146.14
WILKES	46	88.07	101.78	98.49
WILSON	68	118.80	118.54	122.77
YADKIN	36	138.26	115.38	91.16
YANCEY	12	91.24	111.82	100.00

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

OTHER ISCHEMIC HEART DISEASE

NORTH CAROLINA 1971 - 1973

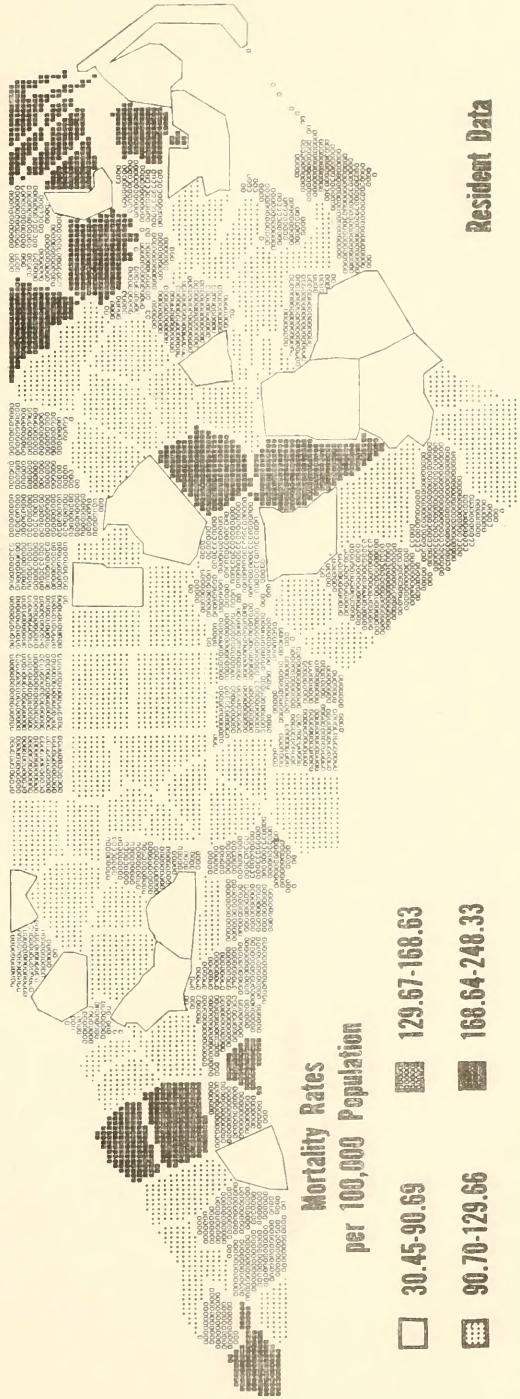


FIGURE 5.A

OTHER ISCHEMIC HEART DISEASE

NORTH CAROLINA 1971 - 1973

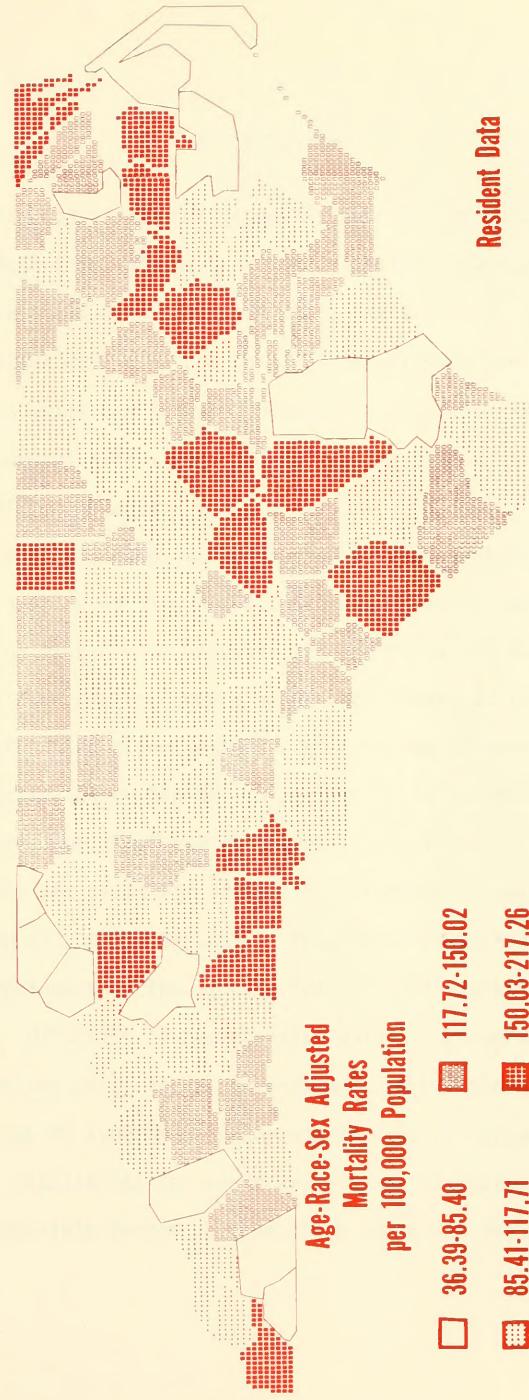


FIGURE 5.B

HYPERTENSION

Hypertension is the most commonly reported circulatory problem in the United States; but of an estimated 25 million Americans suffering from this disease, half are unaware of the condition (16). Approximately one of every 4 black Americans age 18 or older has hypertension compared to one of every 7 white Americans of comparable age (17). For every four women on birth control pills, one will be hypertensive and should try another method of contraception (18).

Primary hypertension accounts for 90 percent of all hypertensive cases, and its cause is still unknown. Doctors formerly considered this type of high blood pressure to be essential and benign in older people because they believed higher blood pressure was needed to force blood through the constricting blood vessels. While primary hypertension is still referred to as essential or benign, in reality it is neither; the higher the blood pressure, the lower the life expectancy (19).

Although the cause for primary hypertension is unknown, several factors are known to contribute to it. Populations with high salt diets have a greater incidence of the disease than populations which consume minimal amounts of salt. Offspring of hypertensive parents are more prone to become hypertensive than are offspring of parents with normal blood pressure. Obesity contributes to hypertension because the heart must pump blood through an extra mile of capillaries for every extra pound of fatty tissue. Race is thought to be a possible factor because black Americans are more prone to be

hypertensive than are whites. People who have undergone long periods of stress, or severe stress for shorter periods, also have a tendency to be hypertensive thereafter. (18)

Secondary hypertension accounts for about 5 percent of all hypertension cases. Its cause can be diagnosed and the disease can usually be cured. (17) Even malignant hypertension, which was considered hopeless prior to World War II, can now be treated and controlled. If left uncontrolled, however, this rare form of hypertension can kill in less than two years. (19)

Hypertension rarely kills by itself but more often serves as the catalytic agent of death by another name. Speaking to the American Heart Association conference in Dallas in 1974, Dr. Jay N. Cohn of the University of Minnesota Medical School said, "People don't die from high blood pressure directly, but from strokes, heart failure, and kidney disease caused by hypertension." Cohn also stated that lowering the blood pressure of all hypertensive Americans would virtually eliminate strokes and reduce the frequency of heart and kidney disease. (20)

Even though hypertensive persons more often die from related diseases than from hypertension itself, a total of 8,273 American deaths were attributed to hypertension (without mention of heart disease) in 1970, yielding a mortality rate of 4.1 per 100,000 population (21). In North Carolina, 247 such deaths in 1970 resulted in a death rate of 4.9. In both the State and the Nation, there was considerably less difference between the rates for men and women than between the rates for whites and nonwhites (22). In North Carolina, the hypertension mortality rate for blacks is three times the rate for whites.

Since 1968, the North Carolina hypertension mortality rate has declined from 6.2 to 4.6. The percentage decreases in rates were substantial for all race-sex groups except white females and were particularly notable for persons in younger age groups. The 1973 rates were 3.2 for white males, 3.3 for white females, 10.4 for nonwhite males, and 8.2 for nonwhite females. The rate for persons over age 65 was 35.3, seven times the rate of 4.8 for persons 35-64.

As shown in Figure 6.A, the Eastern Region had a small cluster of counties with low hypertension rates during 1971-73 (Northhampton, Hertford, Gates and Camden) but a large segment of level-three and level-four counties extending from Currituck to Carteret. Adjustment for age, race and sex (Figure 6.B) had little effect on low rates in the East, but lowered many of the level-three and level-four rates indicating that these counties had relatively unfavorable age, race and sex population distributions. Just the opposite occurred in the North Central Region where most counties had below average actual rates but above average adjusted rates indicating that low mortality levels reflected favorable age, race and sex distributions and that other mortality factors were not so favorable. In the Western Region, most counties' actual and adjusted rates were both low implying that low mortality was not due to age, race and sex and that other factors were also favorable. The opposite was true for the South Central Region where most counties' actual and adjusted rates were both higher than average meaning that hypertension mortality was not due to age, race and sex factors but that other conditions were unfavorable.

While the above analysis would appear to indicate regional trends in hypertension mortality, individual counties are warned against evaluating mortality based on small numbers of deaths. In these cases, random fluctuation may render rate comparisons invalid.

Since all forms of hypertension can now be treated, the best way to reduce deaths and damage from this disease is to have the blood pressure checked at least annually so that treatment may begin early. The Chronic Disease Branch of the Division of Health Services estimates that health departments take the blood pressure of approximately 100,000 North Carolinians annually as part of family planning services; child health services; or cancer, diabetes, glaucoma and multiphasic screening. However, depending upon local policy, the practice of taking blood pressures varies among health departments.

The Division of Health Services and the Department of Continuing Education of the University of North Carolina School of Nursing, with assistance from AHEC (Area Health Education Centers), will provide 2-day training sessions on hypertension for nurses from all settings beginning May, 1975. With a substantial portion of the funding provided by RMP (Regional Medical Program), the training sessions will be held at eleven different sites throughout the State. In addition, the Chronic Disease Branch is presently developing a hypertension program to be implemented at the local level.

TABLE 6

MORTALITY STATISTICS FOR 1973 AND 1971-1973

NORTH CAROLINA RESIDENTS

HYPERTENSION

GEOGRAPHICAL AREA	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
NORTH CAROLINA	241	4.60	4.60	4.60
DHR REGIONS				
EASTERN	65	5.79	5.23	4.46
SOUTH CENTRAL	64	5.49	5.33	5.59
NORTH CENTRAL	50	4.34	4.83	4.87
WESTERN	62	3.46	3.57	3.99
COUNTIES				
ALAMANCE	4	3.99	4.35	4.81
ALEXANDER	2	9.66	4.89	4.35
ALLEGHANY	0	0.00	0.00	0.00
ANSON	0	0.00	11.31	7.66
ASHE	0	0.00	3.41	1.38
AVERY	0	0.00	0.00	0.00
BEAUFORT	1	2.79	5.56	4.25
BERTIE	3	14.37	14.36	5.51
BLADEN	3	11.24	7.48	4.96
BRUNSWICK	0	0.00	0.00	0.00
BUNCOMBE	8	5.45	5.44	5.68
BURKE	1	1.60	1.61	2.38
CABARRUS	6	7.83	6.98	7.81
CALDWELL	0	0.00	2.86	5.65
CAMDEN	0	0.00	0.00	0.00
CARTERET	1	3.04	5.10	4.13
CASWELL	1	5.25	3.48	1.93
CATAWBA	1	1.05	0.70	1.46
CHATHAM	2	6.74	3.35	2.85
CHEROKEE	1	5.96	1.99	0.98
CHOWAN	2	18.39	12.28	8.81
CLAY	1	18.88	12.58	5.63
CLEVELAND	3	4.02	3.14	3.50
COLUMBUS	3	6.22	4.15	3.85
CRAYEN	5	7.75	5.19	5.66
CUMBERLAND	10	4.63	5.45	11.69
CURRITUCK	3	37.55	21.65	15.63
OARE	0	0.00	0.00	0.00
DAVIDSON	5	5.05	5.42	8.00
DAVIE	0	0.00	3.46	4.53
DOPLIN	4	10.52	4.37	3.13
DURHAM	4	2.95	2.97	2.73
EDGECOMBE	3	5.66	3.79	3.36
FORSYTH	8	3.61	4.69	4.67
FRANKLIN	0	0.00	4.83	2.90
GASTON	6	3.96	3.31	3.60
GATES	0	0.00	0.00	0.00
GRAHAM	1	16.35	5.31	1.71
GRANVILLE	1	3.05	6.07	5.82
GREENE	0	0.00	4.42	5.08
GUILFORD	11	3.69	4.28	4.43
HALIFAX	0	0.00	4.96	3.24
HARNETT	9	17.51	9.81	10.43

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

MORTALITY STATISTICS FOR 1973 AND 1971-1973, NORTH CAROLINA RESIDENTS
HYPERTENSION CONT'D.

COUNTIES (CONT'D)	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
HAYWOOD	1	2.32	3.12	2.15
HENDERSON	5	11.31	5.29	3.08
HERTFORD	0	0.00	1.43	0.52
HOKE	1	5.84	5.88	4.74
HYDE	1	18.79	12.25	5.99
IREDELL	3	3.94	4.88	5.33
JACKSON	1	4.49	2.99	4.59
JOHNSTON	0	0.00	5.31	5.35
JONES	0	0.00	0.00	0.00
LEE	8	24.96	13.70	13.50
LENOIR	1	1.75	4.69	3.89
LINCOLN	0	0.00	0.97	2.44
MCDOWELL	1	3.22	8.60	8.80
MACON	0	0.00	3.97	1.79
MADISON	0	0.00	2.09	0.83
MARTIN	2	8.28	6.84	3.43
MECKLENBURG	10	2.73	3.13	3.62
MITCHELL	0	0.00	4.92	2.28
MONTGOMERY	0	0.00	6.91	5.63
MOORE	0	0.00	4.09	3.60
NASH	4	6.60	6.06	4.75
NEW HANOVER	6	6.73	7.96	7.56
NORTHAMPTON	0	0.00	1.41	1.89
ONSLOW	0	0.00	0.66	2.06
ORANGE	2	3.15	1.61	1.80
PAMLICO	0	0.00	3.55	2.53
PASQUOTANK	2	7.30	8.54	5.14
PENDER	1	5.53	3.67	2.48
PERQUIMANS	0	0.00	7.87	2.67
PERSON	1	3.80	2.53	2.02
PITT	3	4.00	6.22	5.62
POLK	1	8.37	2.79	1.37
RANDOLPH	3	3.78	3.80	4.33
RICHMOND	4	9.86	6.59	5.92
ROBESON	8	9.18	8.07	7.46
ROCKINGHAM	5	6.69	6.72	7.13
ROWAN	3	3.32	4.04	3.46
RUTHERFORD	0	0.00	2.04	2.37
SAMPSON	1	2.12	3.55	3.34
SCOTLAND	3	10.74	13.26	13.72
STANLY	2	4.56	3.04	3.80
STOKES	2	7.82	3.96	5.15
SURRY	3	5.63	5.04	8.75
SWAIN	1	10.53	7.17	4.73
TRANSYLVANIA	0	0.00	0.00	0.00
TYRRELL	1	25.68	8.55	9.22
UNION	2	3.43	4.06	4.67
VANCE	4	12.69	10.48	5.80
WAKE	9	3.68	3.18	3.52
WARREN	1	5.89	7.92	5.42
WASHINGTON	4	29.30	12.08	9.95
WATAUGA	0	0.00	4.08	3.33
WAYNE	8	9.08	4.55	4.34
WILKES	1	1.91	3.86	2.79
WILSON	7	12.22	8.67	8.45
YADKIN	1	3.84	3.88	4.95
YANCEY	1	7.60	2.54	1.40

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

N.C. DEPARTMENT OF HUMAN RESOURCES, DIVISION OF HEALTH SERVICES
PUBLIC HEALTH STATISTICS BRANCH

HYPERTENSION

NORTH CAROLINA 1971 - 1973

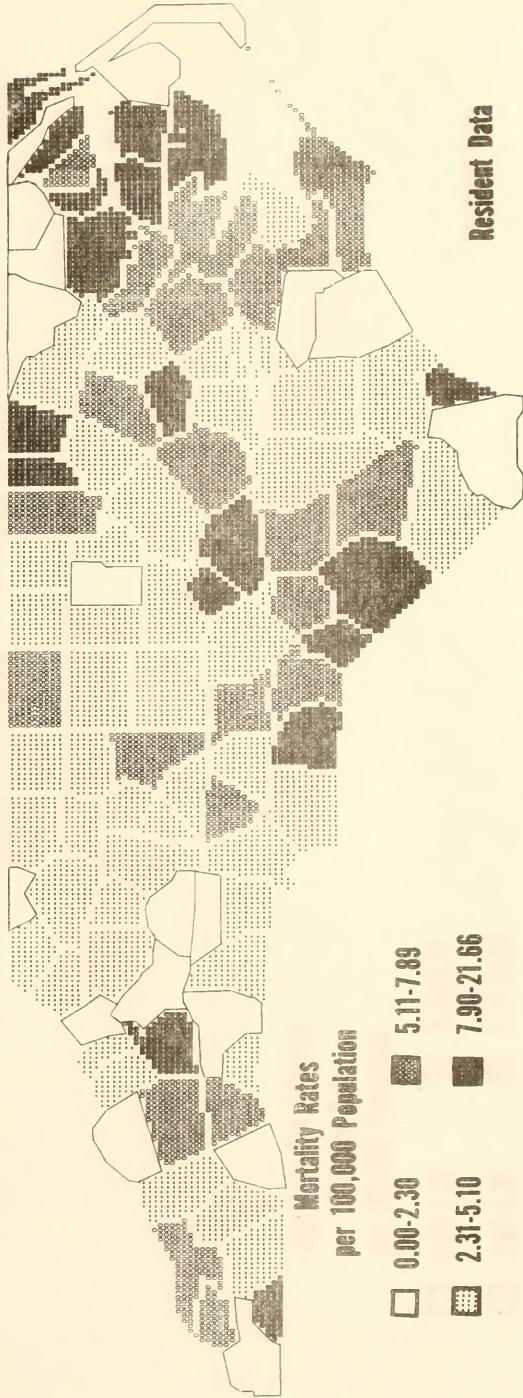


FIGURE 6.A

HYPERTENSION

NORTH CAROLINA 1971 - 1973

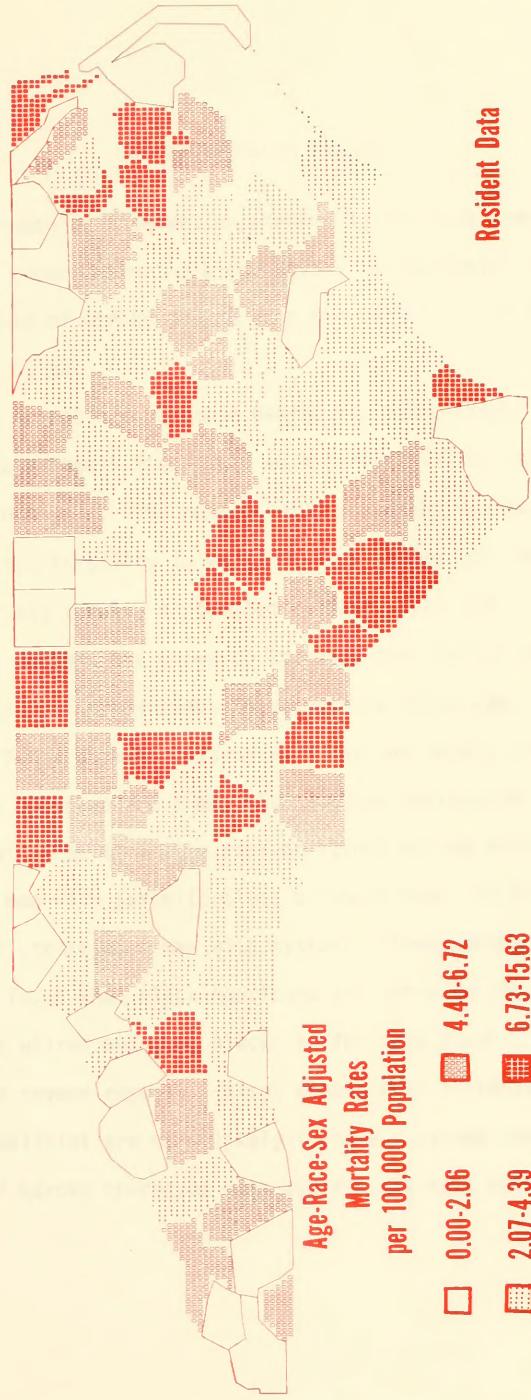


FIGURE 6.B

CEREBROVASCULAR DISEASE

Cerebrovascular disease, or stroke, is the most common form of brain disease and occurs when the blood supply to the brain is impeded. The symptoms and outcome of stroke depend upon the site and size of the lesion, or damaged tissue. (15)

Strokes do not always cause death. In fact, almost eight times as many people in the United States lived with stroke afflictions in 1972 than died of strokes that year. The results of stroke vary and may involve loss of speaking ability, inability to walk, loss of memory, or the temporary or permanent loss of any faculty controlled by the brain. (14)

Several factors are known to increase the risk of stroke. As indicated by a study of Framingham, Massachusetts males ages 30-62, a man who smokes more than a pack of cigarettes a day has nearly five times the risk of stroke as a nonsmoker; a man with a blood cholesterol count of 250 or above has about three times the risk of stroke as one with cholesterol below 194; and a man with systolic blood pressure over 150 has nearly four times the risk of stroke as a man with systolic blood pressure under 120. It has also been found that black Americans are twice as likely to have high blood pressure as whites and that blacks suffer more strokes at an earlier age and with more severe results. Also, people with diabetes or electrocardiogram abnormalities are more likely to have a stroke than others, and the likelihood of stroke increases with age for all race and sex groups. (14)

The United States mortality rate for cerebrovascular disease is approximately the same as it was in 1900. At that time, the rate was 106.9 per 100,000 population whereas the 1973 rate was 102.1 (21,2). The stability of the stroke mortality rate is in sharp contrast to the cancer death rate which has more than doubled during the same time period and to the influenza and pneumonia death rate which has declined to about one-seventh its 1900 level (21).

Preceded by heart disease and cancer, cerebrovascular disease was the third leading cause of death in the United States and North Carolina in 1973 with the North Carolina rate being the higher of the two at 112.5 (2). Although North Carolina's overall mortality for cerebrovascular disease has remained stable, like the country's as a whole, notable changes since 1968 involve reductions in the death rate for males, particularly whites, and some increase for both white and nonwhite females. Reductions for younger North Carolinians have also been notable with the rate for persons 25-44 dropping by 41 percent during the five-year period. The 1973 rates were 91.5 for white males, 116.7 for white females, 137.4 for nonwhite males, and 143.2 for nonwhite females. As is true of other major cardiovascular diseases, age-specific rates were found to increase rapidly after age 35.

Although Figure 7.A shows several clusters of counties with death rates above the county average of 125.5, only one cluster involves mostly level-four rates. This cluster begins with Gates County on the Virginia border and extends southward to Pamlico. Adjusted rates (Figure 7.B) indicate that age, race and sex characteristics were not major reasons for high cerebrovascular mortality in eastern and southcentral counties but that other

mortality conditions were unfavorable. In the counties of Alleghany, Clay, Polk, Warren and several others, adjustment resulted in substantially lower rates. In contrast, adjustment resulted in higher rates for some counties including Cumberland, Scotland and Transylvania.

TABLE 7

MORTALITY STATISTICS FOR 1973 AND 1971-1973

NORTH CAROLINA RESIDENTS

CEREBROVASCULAR DISEASE

GEOGRAPHICAL AREA	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
NORTH CAROLINA	5883	112.52	109.72	109.72
DHR REGIONS				
EASTERN	1395	124.31	124.05	121.03
SOUTH CENTRAL	1227	105.29	100.25	110.56
NORTH CENTRAL	1281	111.37	108.53	106.57
WESTERN	1980	110.59	107.61	103.89
COUNTIES				
ALAMANCE	135	134.66	115.00	118.61
ALEXANDER	11	53.17	70.17	74.62
ALLEGHANY	10	119.07	208.10	91.19
ANSON	29	123.55	134.41	85.54
ASHE	19	98.30	107.45	114.68
AVERY	13	96.61	87.60	61.67
BEAUFORT	76	212.22	212.20	162.10
BERTIE	36	172.47	178.71	125.54
BLADEN	53	198.66	173.36	147.56
BRUNSWICK	14	50.06	64.22	58.16
BUNCOMBE	229	156.02	143.97	109.41
BURKE	62	99.70	96.78	102.32
CABARRUS	100	130.56	113.00	115.09
CALDWELL	54	91.92	93.49	109.99
CAMDEN	7	125.69	96.00	80.76
CARTERET	30	91.41	90.89	92.17
CASWELL	25	131.39	134.33	120.34
CATAWBA	88	92.63	96.31	117.28
CHATHAM	33	111.27	86.17	74.74
CHEROKEE	20	119.38	123.88	80.18
CHOWAN	24	220.77	196.56	153.70
CLAY	9	169.97	144.69	67.16
CLEVELAND	67	89.94	84.34	87.58
COLUMBUS	68	141.11	136.43	126.12
CRaven	59	91.52	94.51	121.40
CUMBERLAND	136	63.08	61.40	128.12
CURRITUCK	7	87.62	82.29	61.25
DARE	11	143.43	105.44	74.27
DAVIDSON	98	99.11	103.16	113.33
DAVIE	23	119.11	103.80	88.76
DUPLIN	63	165.71	152.34	133.13
DURHAM	122	89.99	89.41	86.19
EDGECOMBE	83	156.65	153.81	138.17
FORSYTH	226	102.08	104.89	108.32
FRANKLIN	33	119.20	126.84	100.68
GASTON	135	89.12	102.08	114.37
GATES	19	226.29	205.52	157.59
GRAHAM	8	130.82	106.26	61.23
GRANVILLE	33	100.93	91.10	79.00
GREENE	23	153.93	154.75	165.85
GUILFORD	290	97.49	95.50	99.62
HALIFAX	80	149.43	156.28	125.86
HARNETT	56	108.97	95.49	100.23

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

MORTALITY STATISTICS FOR 1973 AND 1971-1973, NORTH CAROLINA RESIDENTS
CEREBROVASCULAR DISEASE CONT'D.

COUNTIES (CONT'D)	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
HAYWOOD	52	121.08	130.43	111.86
HENDERSON	83	187.78	156.59	109.99
HERTFORD	32	137.80	114.59	84.16
HOKE	23	134.51	101.96	109.84
HYDE	9	169.14	275.78	167.99
IREDELL	89	117.16	123.57	116.77
JACKSON	18	80.84	79.37	74.57
JOHNSTON	77	122.52	124.90	122.88
JONES	11	114.48	116.43	108.98
LEE	36	112.34	102.27	102.19
LENOIR	78	137.00	129.23	130.97
LINCOLN	35	100.48	109.68	119.38
MCDOWELL	51	164.43	135.47	124.97
MACON	21	123.33	87.43	45.26
MADISON	25	158.93	125.69	87.55
MARTIN	32	132.58	119.09	101.75
MECKLENBURG	289	79.13	73.08	85.22
MITCHELL	25	186.90	162.67	87.25
MONTGOMERY	26	135.74	129.63	103.15
MOORE	76	184.84	180.01	143.89
NASH	99	163.36	156.09	146.50
NEW HANOVER	115	129.16	129.72	125.75
NORTHHAMPTON	25	107.80	114.73	84.98
ONSLOW	30	30.26	31.12	102.61
ORANGE	61	96.10	83.34	102.49
PAMLICO	20	213.83	166.93	113.29
PASQUOTANK	28	102.33	111.03	85.31
PENDER	25	138.34	194.95	145.83
PERQUIMANS	10	119.17	161.44	100.98
PERSON	31	118.00	105.37	94.18
PITT	77	102.72	122.35	128.70
POLK	17	142.39	128.34	68.75
RANDOLPH	85	107.21	124.00	128.00
RICHMOND	66	162.82	174.04	161.44
ROBESON	126	144.58	136.07	143.76
ROCKINGHAM	80	107.15	112.57	103.45
ROWAN	131	145.18	146.41	125.14
RUTHERFORD	70	142.64	136.76	108.70
SAMPSON	61	129.55	126.61	115.16
SCOTLAND	42	150.43	123.00	143.70
STANLY	68	155.29	131.00	124.94
STOKES	25	97.84	81.95	78.11
SURRY	60	112.63	100.27	84.86
SWAIN	13	136.94	182.92	125.87
TRANSYLVANIA	25	126.05	112.75	168.65
TYRRELL	8	205.44	282.41	175.82
UNION	63	108.19	104.45	114.24
VANCE	49	155.54	180.27	131.05
WAKE	204	83.41	80.76	94.90
WARREN	35	206.31	138.70	80.87
WASHINGTON	14	102.56	101.54	96.11
WATAUGA	26	105.87	87.12	91.63
WAYNE	105	119.29	103.29	115.25
WILKES	33	63.18	95.99	86.17
WILSON	77	134.52	129.52	124.44
YADKIN	53	203.55	150.38	132.18
YANCEY	21	159.67	147.41	87.86

* SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

N.C. DEPARTMENT OF HUMAN RESOURCES, DIVISION OF HEALTH SERVICES
PUBLIC HEALTH STATISTICS BRANCH

CEREBROVASCULAR DISEASE

NORTH CAROLINA 1971 - 1973

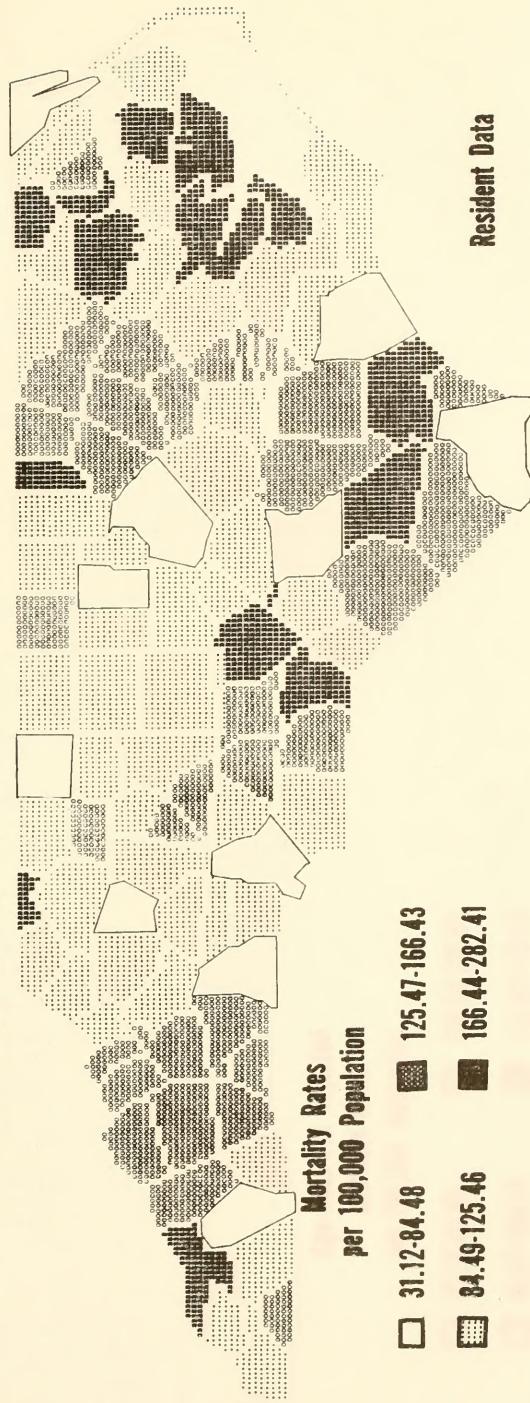


FIGURE 7.A

CEREBROVASCULAR DISEASE

NORTH CAROLINA 1971 - 1973

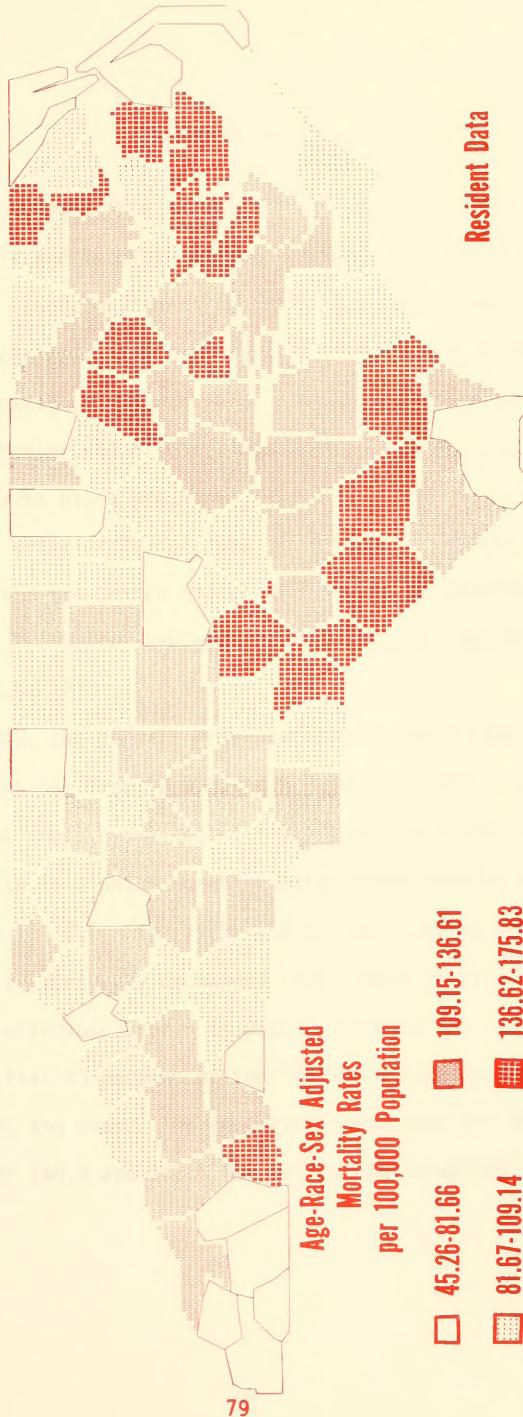


FIGURE 7.B

ARTERIOSCLEROSIS

Arteriosclerosis is a generic term covering a number of diseases of the blood vessels and is often called "hardening of the arteries." There are no clinical or laboratory tests for estimating accurately the degree and extent of arteriosclerosis, and diagnosis is usually made after the appearance of an overt complication. Hypertension, a major predisposing factor, enhances the risk of arteriosclerosis disease; conversely, arteriosclerosis may accentuate already elevated blood pressure. (15)

In 1973, arteriosclerosis was one of the 10 leading causes of death in North Carolina and the United States with the North Carolina rate being the lower of the two. The State rate was 13.5 per 100,000 population; the United States rate was 15.5. (2)

Since 1968, the overall arteriosclerosis death rate in North Carolina has risen only slightly, from 12.9 to 13.5. The increase is entirely attributable to increases among nonwhites with the nonwhite female rate rising sharply from 10.2 to 14.0 while nonwhite males experienced a more moderate increase from 11.5 to 12.7. The 1973 rate for white males was 11.3 and for white females, 15.7, virtually unchanged from levels observed in 1968.

Because arteriosclerosis is associated with the aging process, it is not surprising that 93 percent of the 705 North Carolina deaths in 1973 occurred at ages 65 and over. The resulting death rate for this age group was 145.2 with rates of 140.9 and 162.8 for whites and nonwhites respectively.

The 1971-73 mortality pattern depicted in Figure 8.A reveals a cluster of high-risk counties in the West, starting with Polk and extending to Cherokee, and two bands of high-risk counties in central North Carolina extending from the Virginia border to the South Carolina border. The smaller of these bands runs from Granville County to Union County. The larger band runs from Northampton to Bladen where it extends both east and west. Adjusted rates (Figure 8.B) indicate that high mortality generally was not due to unusual age, race and sex factors. Low rates also were not substantially increased by adjustment meaning that all conditions were favorable in counties where actual arteriosclerosis mortality was low.

TABLE 8

MORTALITY STATISTICS FOR 1973 AND 1971-1973

NORTH CAROLINA RESIDENTS

ARTERIOSCLEROSIS

GEOGRAPHICAL AREA	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
NORTH CAROLINA	705	13.48	13.14	13.14
DHR REGIONS				
EASTERN	157	13.99	12.93	13.09
SOUTH CENTRAL	163	13.98	15.15	17.49
NORTH CENTRAL	134	11.64	11.07	10.77
WESTERN	251	14.01	13.31	12.35
COUNTIES				
ALAMANCE	13	12.96	10.39	11.15
ALEXANDER	3	14.50	9.79	14.02
ALLEGHANY	0	0.00	0.00	0.00
ANSON	0	0.00	21.22	14.14
ASHE	9	46.56	44.34	22.97
AVERY	2	14.86	7.50	5.41
BEAUFORT	2	5.58	12.04	9.08
BERTIE	1	4.79	9.57	6.58
BLADEN	7	26.23	16.21	13.92
BRUNSWICK	5	17.88	13.58	14.94
BUNCOMBE	26	17.71	17.71	12.56
BURKE	10	16.08	10.75	8.64
CABARRUS	5	6.52	9.16	8.96
CALDWELL	3	5.10	5.16	7.36
CAMDEN	4	71.82	24.00	19.97
CARTERET	1	3.04	6.12	6.13
CASWELL	2	10.51	10.46	7.81
CATAWBA	13	13.68	13.81	17.51
CHATHAM	8	26.97	21.26	18.07
CHEROKEE	6	35.81	21.97	21.49
CHOWAN	5	45.99	46.07	32.04
CLAY	1	18.88	12.58	7.13
CLEVELAND	9	12.08	9.87	10.01
COLUMBUS	4	8.30	4.84	4.96
CRAYEN	10	15.51	12.98	18.04
CUMBERLAND	16	7.42	6.85	15.41
CURRITUCK	1	12.51	21.65	14.32
DARE	0	0.00	30.75	26.29
DAVIDSON	19	19.21	15.27	16.87
DAVIE	1	5.17	6.92	5.24
DUPLIN	6	15.78	10.50	10.69
DURHAM	20	14.75	21.54	23.03
EDGECOMBE	10	18.87	17.09	17.63
FORSYTH	17	7.67	9.70	10.41
FRANKLIN	1	3.61	8.45	6.82
GASTON	33	21.78	17.23	21.28
GATES	0	0.00	3.95	4.72
GRAHAM	2	32.70	31.88	35.43
GRANVILLE	9	27.52	26.31	27.42
GREENE	1	6.69	2.21	3.63
GUILFORD	30	10.08	11.51	11.86
HALIFAX	17	31.75	30.38	23.15
HARNETT	5	9.72	13.08	13.69

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

MORTALITY STATISTICS FOR 1973 AND 1971-1973, NORTH CAROLINA RESIDENTS
ARTEPIOSCLEROSIS CONT'D.

COUNTIES (CONT'D)	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
HAYWOOD	1	2.32	7.81	4.33
HENDERSON	11	24.88	23.45	13.61
HERTFORD	1	4.30	4.29	4.88
HOKE	2	11.69	11.76	14.58
HYDE	0	0.00	6.12	4.75
IREDELL	7	9.21	11.55	10.16
JACKSON	2	8.98	14.97	12.23
JOHNSTON	6	9.54	21.26	21.32
JONES	0	0.00	3.42	1.90
LEE	4	12.48	17.92	17.68
LENOIR	8	14.05	12.92	16.14
LINCOLN	1	2.87	11.64	10.16
MCDOWELL	3	9.67	9.67	7.04
MACON	4	23.49	19.87	9.02
MADISON	0	0.00	4.18	1.88
MARTIN	2	8.28	9.58	11.98
MECKLENBURG	33	9.03	8.58	10.29
MITCHELL	1	7.47	7.39	3.91
MONTGOMERY	4	20.88	15.55	11.13
MOORE	15	36.48	30.27	23.44
NASH	11	18.15	12.68	11.95
NEW HANOVER	15	16.84	15.93	15.89
NORTHHAMPTON	3	12.93	16.99	11.98
ONSLOW	5	5.04	3.01	10.07
ORANGE	4	6.30	9.14	10.87
PAMlico	1	10.69	7.10	3.86
PASQUOTANK	3	10.96	9.76	8.78
PENDER	4	22.13	23.90	18.77
PERQUIMANS	2	23.83	11.81	6.49
PERSON	1	3.80	6.34	7.57
PITT	5	6.67	7.56	9.86
POLK	5	41.87	39.06	24.20
RANDOLPH	12	15.13	12.27	11.65
RICHMOND	4	9.86	7.42	7.28
ROBESON	27	30.98	32.67	36.30
ROCKINGHAM	16	21.43	14.35	12.67
ROWAN	15	16.62	15.08	12.63
RUTHERFORD	1	2.03	9.52	7.21
SAMPSON	5	10.61	16.35	16.62
SCOTLAND	9	32.23	30.14	35.84
STANLY	5	11.41	6.85	5.80
STOKES	3	11.74	5.28	4.06
SURRY	5	9.38	6.93	7.84
SWAIN	2	21.06	39.45	23.91
TRANSYLVANIA	4	20.16	20.19	15.46
TYRRELL	0	0.00	8.55	3.77
UNION	28	48.08	36.55	40.58
VANCE	3	9.52	5.24	4.78
WAKE	27	11.04	8.17	9.95
WARREN	1	5.89	5.94	1.52
WASHINGTON	3	21.97	7.25	6.05
WATAUGA	1	4.07	6.80	4.80
WAYNE	12	13.63	16.33	18.53
WILKES	2	3.82	7.08	5.23
WILSON	15	26.20	20.81	20.10
YADKIN	1	3.84	7.77	4.76
YANCEY	3	22.81	10.16	5.32

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

N.C. DEPARTMENT OF HUMAN RESOURCES, DIVISION OF HEALTH SERVICES
PUBLIC HEALTH STATISTICS BRANCH

ARTERIOSCLEROSIS

NORTH CAROLINA 1971 - 1973

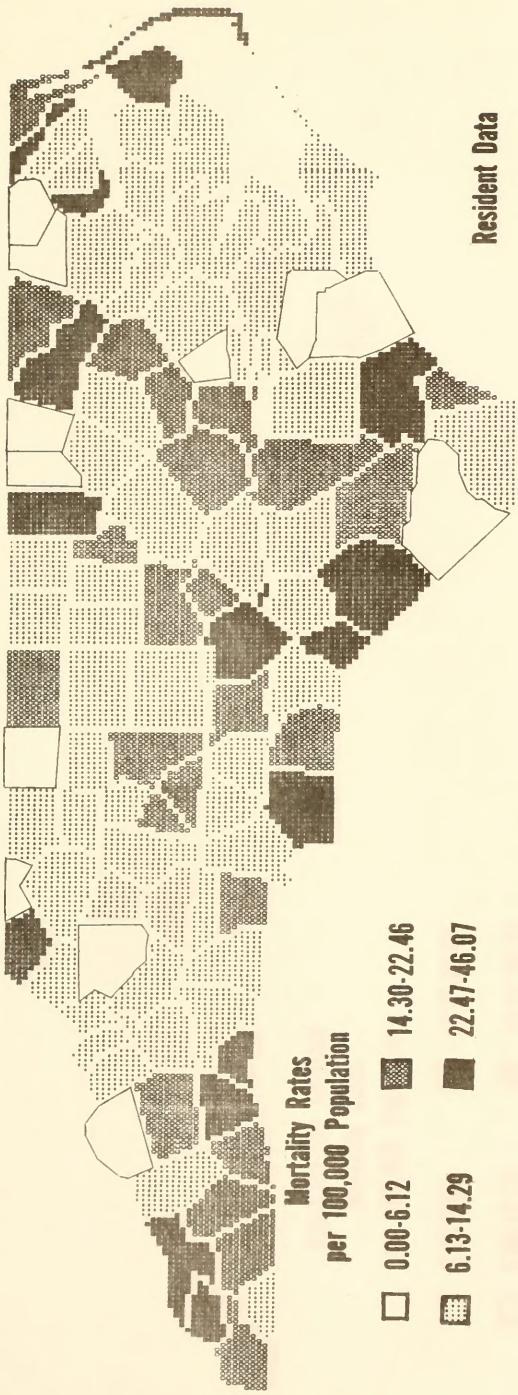


FIGURE 8.A

ARTERIOSCLEROSIS

NORTH CAROLINA 1971 - 1973

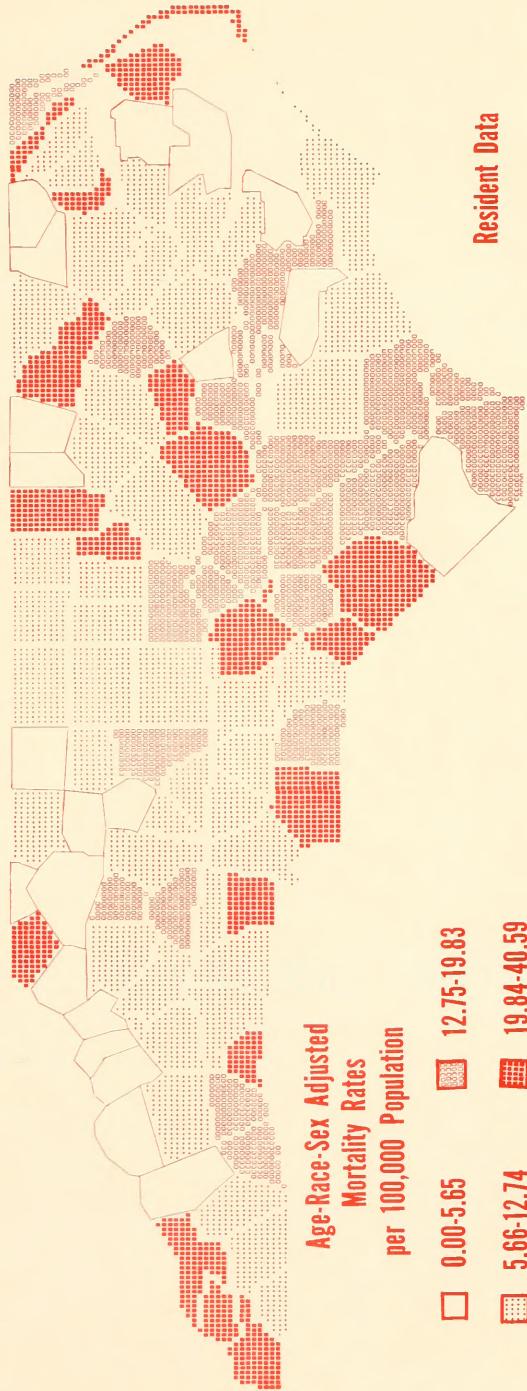


FIGURE 8.B

V. CANCER MORTALITY

TOTAL CANCER

Accounting for one of every six deaths in the United States, cancer ranks only behind heart disease as a leading cause of death (23). In 1973, this disease killed 351,055 Americans (2), more than were killed in both World War II and the Korean War (24). In North Carolina, the 1973 death toll reached 7,416. The resulting death rate was 141.9 per 100,000 population, an increase of about 40 percent since 1960. The United States rate of 167.3 in 1973 represented a 12 percent increase over the same 13-year period (2).

During this period, cancer mortality rates increased more for non-whites than for whites; the nonwhite rate increase of 60 percent in North Carolina compares to a 17 percent rate increase for nonwhites nationally. Men had larger rate increases than women, and nonwhite men had the greatest mortality rate increase of any race-sex group: approximately 83 percent in the State and 27 percent nationally. The 1973 North Carolina cancer mortality rates for specific groups were as follows: whites, 139.7; nonwhites, 149.3; males, 161.5; females, 123.1; white males, 157.6; white females, 122.4; non-white males, 174.9; and nonwhite females, 125.8.

The American Cancer Society (ACS) defines cancer, or malignant neoplasms, as "a group of diseases in which there is uncontrolled and disordered growth of abnormal cells, which if unchecked will cause death" (25). There are four stages of cancer growth: in situ, locally invasive, regional involvement, and advanced cancer. While cancer in the in situ state is almost always curable, cancer in its advanced stage is almost always incurable. (26)

Progress is being made in the treatment of cancer as there are now one and one-half million living Americans who have been cured of malignant neoplasms. The best chance for curing cancer lies in early detection. (23) To make early detection possible, it is necessary to know the cancer warning signs and to receive annual checkups. The seven warning signs listed by the ACS are: a change in bowel or bladder habits; a sore that does not heal; unusual bleeding or discharge; thickening or lump in a breast or elsewhere; indigestion or difficulty in swallowing; obvious change in a wart or mole; a nagging cough or hoarseness (27). Persons experiencing any cancer warning signal should see a doctor immediately. United States statistics for 1970 indicate that nearly a third of the 320,000 cancer deaths for that year could have been averted by earlier detection and treatment (26).

Cancer screening services currently provided by the North Carolina Division of Health Services consist of Pap tests for cervical cancer, blood tests, urinalysis, X-ray, and patient histories. In most cases, these and other services are available through county health departments and in all cases through 32 multiphasic screening centers across the State.

The Chronic Disease Branch of the Division of Health Services administers a financial aid program for cancer diagnosis and treatment. This program is designated for lower income patients and may not be used by persons receiving medical financial aid from any other source. While the original time limits for the program allow three days for diagnostic hospitalization and 15 days of hospitalization for treatment, these limits may be extended as physicians deem necessary.

To aid in cancer research, the Division of Health Services maintains the Cancer Registry which allows for the development of survival rates for patients suffering from all types of cancer. Operating on a voluntary basis, 24 participating hospitals submit information forms on each new cancer patient as well as yearly follow-up reports on all former cancer patients. By recording the type of treatment given each patient for each type of cancer and publishing an annual report of the findings, the North Carolina Cancer Registry should prove valuable in evaluating treatment practices.

For its part, the Public Health Statistics Branch has prepared a series of statistical maps which give county-by-county descriptions of the death rates for leading types of cancer. Since certain forms of cancer have been linked to environmental factors, it is hoped that epidemiologists will study and analyze high-risk areas for possible causes. In addition, trend data given in the site-specific narratives may also suggest areas for further study.

In describing total cancer mortality, Figure 9.A displays county death rates for the three-year period 1971-73. Excessively high rates occurred for residents of some Eastern and Western counties, while residents of central North Carolina were relatively free of excessive rates.

A comparison of the actual rates of Figure 9.A with the adjusted rates of Figure 9.B reveals that adjustment for the age, race, and sex composition of county populations resulted in notably lower rates in the case of Cherokee and Polk counties. This means that relatively high cancer mortality in these counties may be attributed to unfavorable age, race and sex factors in the county populations. In contrast, the adjusted rates for Ashe, Cumberland

and Onslow counties were considerably higher than the actual rates indicating that conditions other than age, race, and sex distributions were unfavorable for cancer mortality. These and other counties with high adjusted rates (Figure 9.B) should investigate possible determinants of cancer mortality.

In the sections to follow, site-specific cancer mortality is examined. Comments given below highlight the 1960 to 1973 changes in North Carolina's death rates:

<u>Site</u>	<u>1973 N. C. Death Rate</u>	<u>Changes in N. C. Death Rate Since 1960*</u>
All Sites	141.9	<u>Increase</u> of about 40 percent, mainly due to Lung cancer.
Stomach	5.6	<u>Decrease</u> of about 27 percent by 1968; no improvement since.
Colon and Rectum	14.3	<u>Overall increase</u> of about 30 percent, due entirely to cancer of the colon.
Pancreas	8.3	<u>Overall increase</u> of about 38 percent, mostly occurring between 1972 and 1973.
Lung	30.3	Dramatic <u>increase</u> of approximately 345 percent; steady increases since 1968.
Breast (females only)	22.8	<u>Overall increase</u> of about 44 percent; largely occurring by 1968; fluctuations and moderate increase since.
Cervix Uteri	7.3	<u>Decrease</u> of about 26 percent with only slight improvement since 1968.
Ovary	8.3	<u>Overall increase</u> of approximately 46 percent, mostly occurring between 1972 and 1973.
Prostate	17.8	<u>Overall increase</u> of about 47 percent.
Leukemia	6.7	Slight fluctuation; no appreciable change.

*The percentage increases and decreases are only approximate since cause of death coding procedures used in 1960 were not strictly comparable to those used in 1973. Procedures for 1968 and forward are comparable (3).

TABLE 9

MORTALITY STATISTICS FOR 1973 AND 1971-1973

NORTH CAROLINA RESIDENTS

TOTAL CANCER

GEOGRAPHICAL AREA	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
NORTH CAROLINA	7416	141.85	136.21	136.21
DHR REGIONS				
EASTERN	1666	148.46	139.99	143.28
SOUTH CENTRAL	1491	127.95	123.79	138.17
NORTH CENTRAL	1738	151.10	142.63	139.04
WESTERN	2521	140.81	137.77	132.21
COUNTIES				
ALAMANCE	143	142.64	144.51	142.16
ALEXANDER	31	149.86	109.33	116.42
ALLEGHANY	16	190.52	164.08	174.55
ANSON	38	161.90	149.98	123.47
ASHE	22	113.83	121.10	182.21
AVERY	22	163.49	155.19	154.10
BEAUFORT	69	192.67	209.42	172.97
BERTIE	44	210.80	169.13	152.86
BLADEN	42	157.43	120.98	111.57
BRUNSWICK	30	107.28	119.80	117.04
BUNCOMBE	259	176.46	179.39	147.74
BURKE	62	99.70	105.38	98.65
CABARRUS	115	150.14	144.42	134.76
CALDWELL	62	105.54	114.14	125.76
CAMDEN	5	89.78	120.00	103.27
CARTERET	51	155.39	160.33	159.33
CASWELL	33	173.43	151.78	145.12
CATAWBA	114	120.00	119.68	130.75
CHATHAM	54	182.08	163.39	143.23
CHEROKEE	26	155.19	153.85	108.85
CHOWAN	24	220.77	165.85	138.41
CLAY	7	132.20	94.36	47.69
CLEVELAND	102	136.93	131.90	130.65
COLUMBUS	77	159.79	125.35	123.83
CRAVEN	68	105.49	100.22	132.21
CUMBERLAND	150	69.58	74.64	146.64
CURRITUCK	13	162.72	129.93	97.02
DARE	27	352.06	246.04	191.08
DAVIDSON	125	126.42	126.58	132.29
DAVIE	30	155.36	122.83	113.74
DUPLIN	66	173.60	169.85	155.47
DURHAM	213	157.12	159.74	154.40
EDGECOMBE	89	167.97	159.51	149.25
FORSYTH	315	142.28	140.67	144.02
FRANKLIN	45	162.55	157.04	140.92
GASTON	194	128.06	124.83	127.10
GATES	15	178.65	166.00	136.61
GRAHAM	8	130.82	95.64	63.78
GRANVILLE	47	143.76	139.69	126.93
GREENE	16	107.08	108.32	113.90
GUILFORD	427	143.54	137.60	142.67
HALIFAX	75	140.09	135.20	125.33
HARNETT	76	147.89	142.58	143.65

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

MORTALITY STATISTICS FOR 1973 AND 1971-1973, NORTH CAROLINA RESIDENTS
TOTAL CANCER CONT'D.

COUNTIES (CONT'D)	NUMBER OF DEATHS 1973	OEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED OEATH RATE** 1971-73
HAYWOOD	50	116.42	124.18	108.59
HENDERSON	95	214.93	202.73	148.94
HERTFORD	32	137.80	151.83	128.21
HOKE	20	116.97	98.04	104.19
HYDE	9	169.14	196.11	141.05
IREOELL	108	142.17	139.13	130.85
JACKSON	31	139.22	110.82	115.00
JOHNSTON	85	135.25	141.37	134.24
JONES	14	145.71	140.41	128.13
LEE	48	149.79	142.33	141.59
LENOIR	79	138.76	133.93	139.46
LINCOLN	49	140.67	130.07	125.90
MCDOWELL	53	170.88	165.57	146.89
MACON	23	135.07	143.07	82.77
MADISON	28	178.00	152.92	123.81
MARTIN	40	165.72	154.69	143.87
MECKLENBURG	500	136.91	127.80	146.83
MITCHELL	28	209.33	177.46	148.52
MONTGOMERY	31	161.84	145.19	124.67
MOORE	71	172.68	152.19	129.66
NASH	99	163.36	158.30	149.55
NEW HANOVER	146	163.98	167.27	164.64
NORTHAMPTON	41	176.79	162.89	140.96
ONSLOW	55	55.49	59.57	158.36
ORANGE	50	78.77	88.72	115.67
PAMLICO	16	171.06	156.27	131.64
PASQUOTANK	57	208.32	185.45	163.91
PENDER	32	177.07	172.88	143.79
PERQUIMANS	18	214.51	196.88	146.34
PERSON	45	171.29	142.18	134.43
PITT	119	158.76	140.15	157.62
POLK	25	209.39	206.47	130.31
RANOLPH	113	142.53	120.62	117.51
RICHMOND	65	160.35	177.34	164.63
ROBESON	124	142.29	125.69	143.43
ROCKINGHAM	144	192.87	171.77	153.36
ROWAN	128	141.85	145.31	121.86
RUTHERFORD	91	185.43	170.78	148.13
SAMPSON	71	150.79	142.25	128.24
SCOTLAND	39	139.68	137.47	150.12
STANLY	67	153.01	167.56	151.88
STOKES	37	144.81	144.08	139.97
SURRY	89	167.07	158.29	149.56
SWAIN	15	158.01	179.33	178.26
TRANSYLVANIA	32	161.35	138.00	137.99
TYRRELL	7	179.76	213.94	154.93
UNION	57	97.88	124.18	127.80
VANCE	61	193.63	161.40	138.65
WAKE	314	128.39	118.72	139.52
WARREN	40	235.79	215.98	161.07
WASHINGTON	23	168.49	120.88	122.66
WATAUGA	23	93.65	118.43	120.34
WAYNE	114	129.52	108.23	127.25
WILKES	64	122.54	108.23	106.59
WILSON	96	167.72	159.59	155.17
YAOKIN	44	168.99	146.49	126.67
YANCEY	14	106.44	127.07	77.62

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

N.C. DEPARTMENT OF HUMAN RESOURCES, DIVISION OF HEALTH SERVICES
PUBLIC HEALTH STATISTICS BRANCH

TOTAL CANCER

NORTH CAROLINA 1971 - 1973

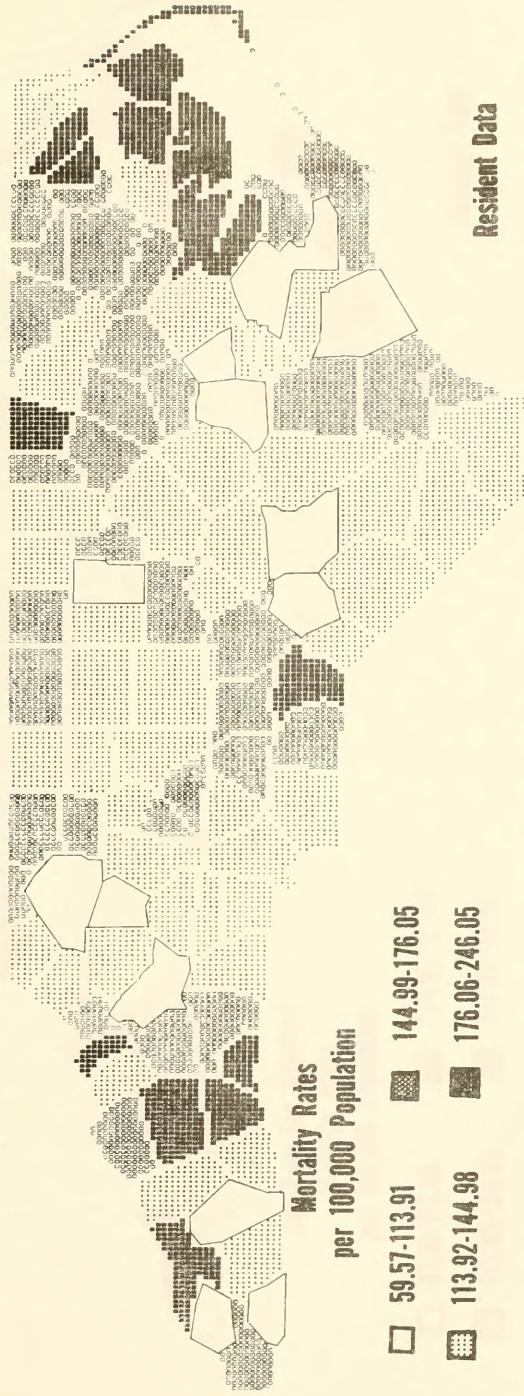


FIGURE 9 A

TOTAL CANCER

NORTH CAROLINA 1971 - 1973

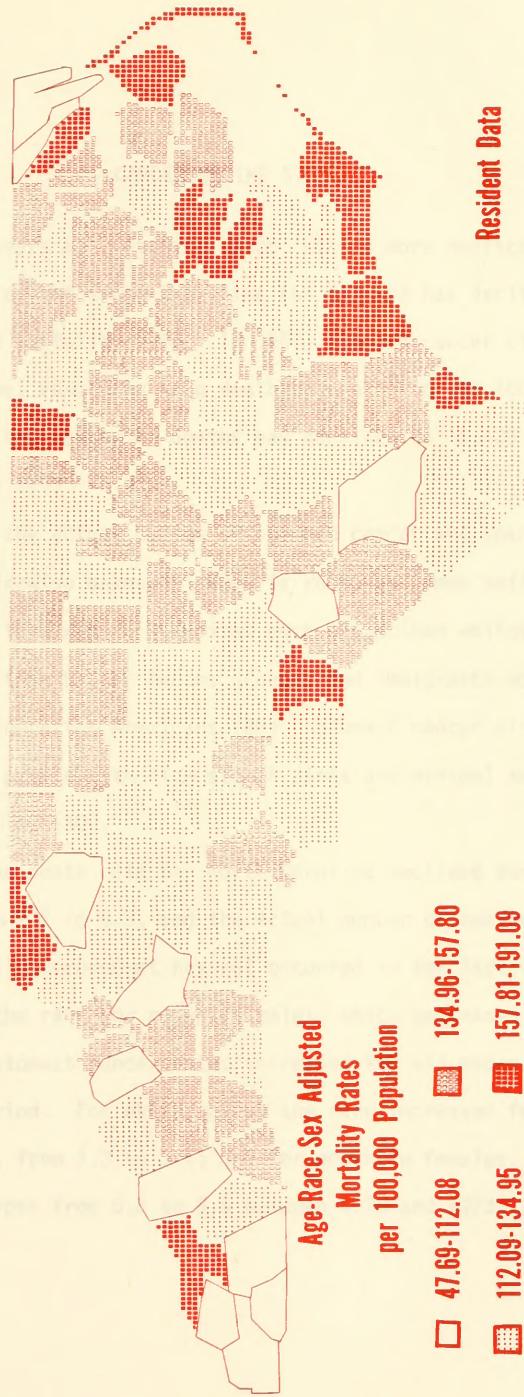


FIGURE 9.B

CANCER OF THE STOMACH

Thirty years ago, stomach cancer killed more Americans than any other form of cancer but since that time the disease has declined steadily in both incidence and mortality (28). In 1960, stomach cancer claimed the lives of 20,859 Americans, resulting in a death rate of 11.6 per 100,000 population (1). Nine years later, the number of deaths had declined to 16,429 and the rate had dropped to 8.1 (29).

Because the actual causes of stomach cancer are unknown, reasons for the decline are likewise unknown. What is known is: men suffer from stomach cancer more often than women; nonwhites more often than whites; lower income groups more often than higher income groups; and immigrants more often than second or third generation Americans (28). Stomach cancer also seems to be more common among people with high starch diets and minimal amounts of fresh fruits and vegetables (30).

While the death rate for North Carolina declined during the ten years 1960 to 1970, from 7.7 to 5.3, and the actual number of deaths dropped from 353 to 270, overall improvement has not occurred in the last three years. With the exception of the rate for nonwhite males, which decreased from 13.0 in 1970 to 11.8 in 1973, stomach cancer rates increased for all races and sexes during the three-year period. For white males, the rate increased from 5.3 to 6.0; for white females, from 3.3 to 3.4; and for nonwhite females, from 4.7 to 5.8. The overall rate rose from 5.3 to 5.6 between 1970 and 1973.

The incidence of stomach cancer, like most forms of cancer, increases with advancing age. From 1970 to 1973, the age group 55-64 had a stomach cancer mortality rate increase of 34 percent, from 12.8 to 17.1. The higher risk ages (65-74, 75-84, and over 85) experienced rate declines during the same period.

During 1971-73, county death rates for stomach cancer ranged from 0.0 to 19.7 with an average county rate of 6.3 for the period (Figure 10.A). Major high-risk areas are located in the East and West with a major low-risk area located in the South Central Region. A comparison of Figures 10.A and 10.B reveals that adjustment for the age, race and sex characteristics of county populations resulted in notably lower rates for some counties (Henderson, Tyrrell, and Yancey for example) but substantially higher rates for other counties including Onslow and Surry. Generally, this would mean that below average actual mortality in these latter counties was due largely to favorable age, race and sex composition of the county populations with other conditions being unfavorable. It should be noted, however, that many of the county rates for stomach cancer are based on small numbers of deaths which may result in random fluctuation of these rates.

TABLE 10

MORTALITY STATISTICS FOR 1973 AND 1971-1973

NORTH CAROLINA RESIDENTS

CANCER OF THE STOMACH

GEOGRAPHICAL AREA	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
NORTH CAROLINA	291	5.56	5.58	5.58
DHR REGIONS				
EASTERN	76	6.77	6.27	6.01
SOUTH CENTRAL	61	5.23	5.10	5.37
NORTH CENTRAL	68	5.91	5.27	5.19
WESTERN	86	4.80	5.65	5.79
COUNTIES				
ALAMANCE	7	6.98	4.35	4.71
ALEXANDER	0	0.00	0.00	0.00
ALLEGHANY	2	23.81	8.00	3.62
ANSON	4	17.04	12.73	8.54
ASHE	3	15.52	11.93	58.33
AVERY	2	14.86	7.50	5.76
BEAUFORT	5	13.96	11.12	6.89
BERTIE	1	4.79	14.36	13.03
BLADEN	1	3.74	1.24	1.46
BRUNSWICK	1	3.57	4.94	4.38
BUNCOMBE	2	1.36	7.94	7.86
BURKE	2	3.21	5.37	5.49
CABARRUS	3	3.91	5.23	5.51
CALOWELL	2	3.40	4.58	7.58
CAMOEN	0	0.00	12.00	9.62
CARTERET	5	15.23	7.14	5.58
CASWELL	2	10.51	5.23	6.12
CATAWBA	5	5.26	6.01	8.02
CHATHAM	1	3.37	5.59	4.31
CHEROKEE	3	17.90	7.99	4.12
CHOWAN	1	9.19	6.14	5.23
CLAY	0	0.00	0.00	0.00
CLEVELAND	0	0.00	3.58	3.80
COLUMBUS	2	4.15	6.23	6.38
CRAYEN	1	1.55	3.11	3.34
CUMBERLAND	7	3.24	3.11	6.53
CURRITUCK	0	0.00	4.33	4.48
DARE	1	13.03	4.39	2.30
DAVIDSON	4	4.04	3.39	4.47
DAVIE	2	10.35	5.19	5.92
DUPLIN	4	10.52	7.87	6.30
DURHAM	10	7.37	8.17	7.12
EDGECOMBE	7	13.21	8.86	6.52
FORSYTH	15	6.77	6.82	6.94
FRANKLIN	2	7.22	4.83	2.79
GASTON	9	5.94	3.97	4.24
GATES	0	0.00	7.90	5.09
GRAHAM	0	0.00	5.31	4.05
GRANVILLE	0	0.00	6.07	6.04
GREENE	1	6.69	4.42	4.06
GUILFORD	15	5.04	4.51	4.80
HALIFAX	4	7.47	6.20	6.46
HARNETT	5	9.72	5.88	6.26

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

MORTALITY STATISTICS FOR 1973 AND 1971-1973, NORTH CAROLINA RESIDENTS
CANCER OF THE STOMACH CONT'D.

COUNTIES (CONT'D)	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
HAYWOOD	2	4.65	8.59	5.85
HENDERSON	7	15.83	9.07	5.29
HERTFORD	1	4.30	7.16	5.29
HOKE	1	5.84	1.96	1.03
HYDE	1	18.79	6.12	3.51
IREDELL	4	5.26	5.77	5.30
JACKSON	1	4.49	5.99	6.00
JOHNSTON	4	6.36	9.03	8.79
JONES	0	0.00	6.84	5.11
LEE	2	6.24	3.16	3.16
LENOIR	2	3.51	4.69	5.87
LINCOLN	1	2.87	3.88	3.35
MCDOWELL	2	6.44	3.22	2.33
MACON	0	0.00	3.97	2.41
MADISON	3	19.07	12.56	19.19
MARTIN	2	8.28	13.68	10.19
MCKLENBURG	18	4.92	5.62	6.55
MICHELL	0	0.00	12.32	6.51
MONTGOMERY	2	10.44	6.91	6.57
MOORE	4	9.72	5.72	4.54
NASH	5	8.25	9.37	7.82
NEW HANOVER	6	6.73	4.55	4.78
NORTHAMPTON	2	8.62	5.66	5.60
ONSLOW	2	2.01	4.01	9.92
ORANGE	0	0.00	2.68	3.27
PAMLICO	3	32.07	17.75	12.82
PASQUOTANK	1	3.65	2.44	2.02
PENDER	1	5.53	7.35	4.21
PERQUIMANS	0	0.00	19.68	13.63
PERSON	0	0.00	2.53	1.91
PITT	5	6.67	5.33	5.29
POLK	0	0.00	2.79	1.25
RANDOLPH	5	6.30	5.50	4.40
RICHMOND	3	7.40	11.54	10.46
ROBESON	3	3.44	4.99	4.27
ROCKINGHAM	5	6.69	4.03	3.41
ROWAN	3	3.32	4.78	3.93
RUTHERFORD	3	6.11	6.80	5.62
SAMPSON	2	4.24	2.13	1.77
SCOTLAND	4	14.32	7.23	4.74
STANLY	1	2.28	4.56	3.43
STOKES	2	7.82	7.93	5.96
SURRY	3	5.63	6.30	8.88
SWAIN	0	0.00	3.58	2.47
TRANSYLVANIA	1	5.04	6.73	16.43
TYPRELL	0	0.00	8.55	3.36
UNION	1	1.71	2.32	2.57
VANCE	0	0.00	5.24	4.78
WAKE	8	3.27	3.74	4.40
WARREN	1	5.89	5.94	6.21
WASHINGTON	1	7.32	4.83	4.10
WATAUGA	1	4.07	5.44	4.57
WAYNE	10	11.36	5.69	5.79
WILKES	4	7.65	5.79	4.32
WILSON	1	1.74	2.31	2.09
YADKIN	5	19.20	11.66	8.20
YANCEY	1	7.60	10.16	5.80

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

N.C. DEPARTMENT OF HUMAN RESOURCES, DIVISION OF HEALTH SERVICES
PUBLIC HEALTH STATISTICS BRANCH

CANCER OF THE STOMACH

NORTH CAROLINA 1971 - 1973

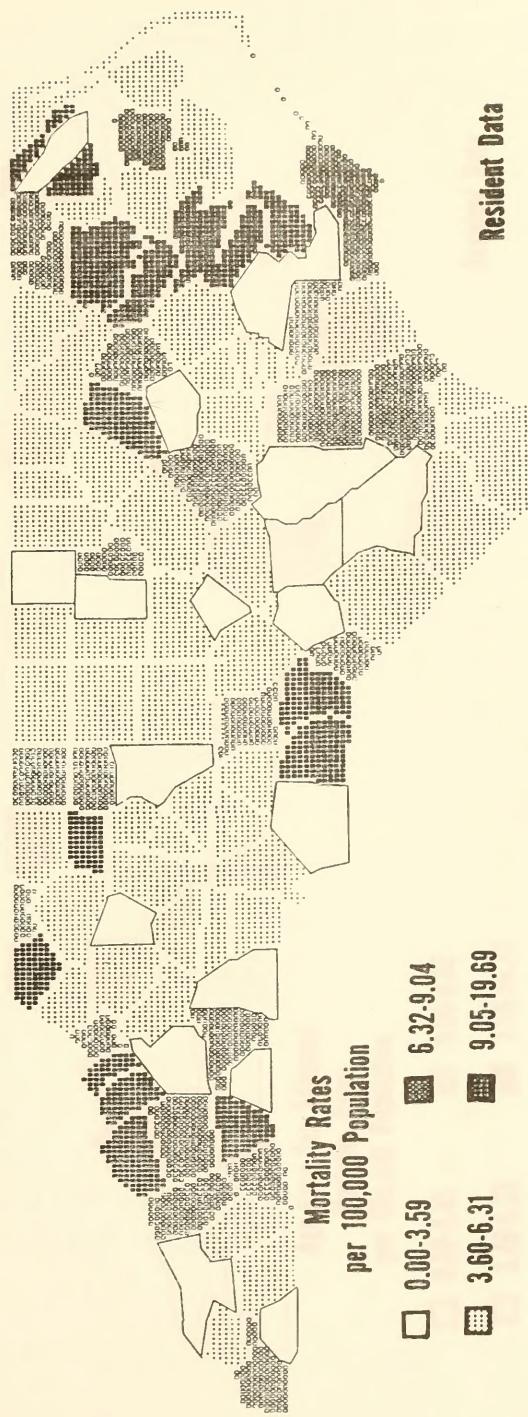


FIGURE 10.A

CANCER OF THE STOMACH

NORTH CAROLINA 1971 - 1973

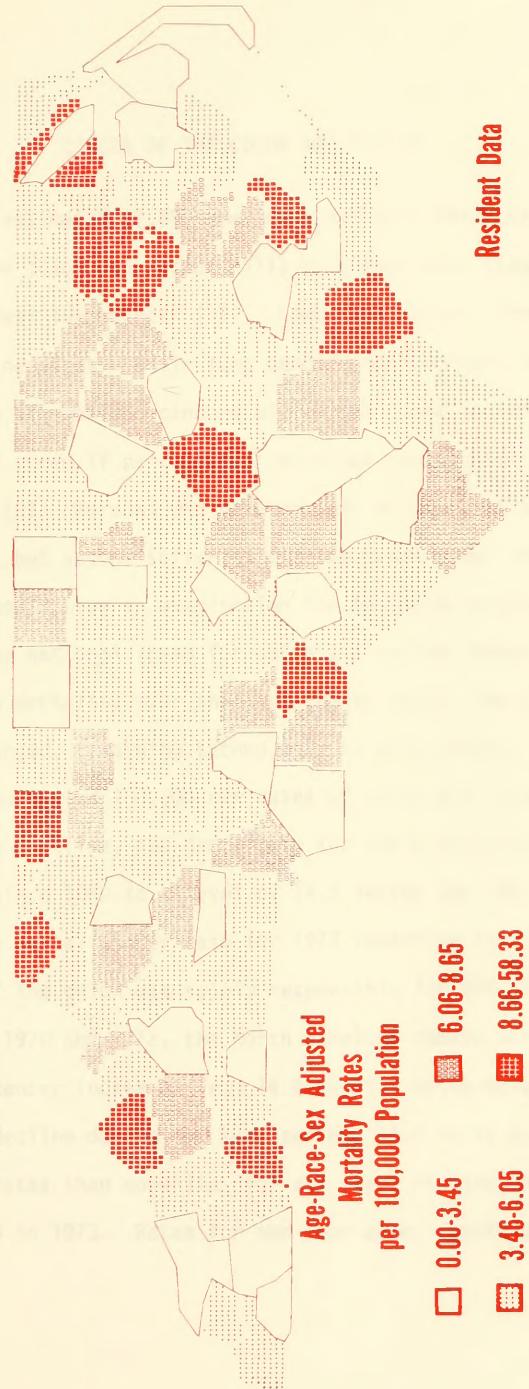


FIGURE 10.B

CANCER OF THE COLON AND RECTUM

With an estimated 47,000 Americans dying of these diseases in 1973, cancer of the colon and rectum kills more Americans than any other type of cancer except lung cancer (32). Like lung cancer, three-fourths of the deaths are needless. While lung cancer could largely be prevented by the elimination of smoking, cancers of the colon and rectum could be detected early and cured if proctoscopic examinations were included in yearly physicals. (27) Persons who have reached 40 years of age are in the higher risk group, but anyone suffering from abnormal bowel habits for two weeks or longer should have an examination for possible cancer.

While the national trend for colon and rectum cancers shows a slight decrease in mortality over the last twenty years, the incidence rate is virtually unchanged, remaining second only to skin cancer. By 1976, there will be an estimated 100,000 new cases of colon and rectum cancer. (27)

In North Carolina, the death rate for these diseases has increased about 30 percent since 1960 to a level of 14.3 deaths per 100,000 population in 1973. With the rectal cancer rate for 1973 remaining at 2.6, the same as in 1960, cancer of the colon was solely responsible for the overall increase.

Between 1970 and 1973, the North Carolina female mortality rate for colon-rectum cancer increased from 14.4 to 15.6 while males experienced a mortality rate decline during the same period, 14.0 to 12.9. Whites had higher mortality rates than nonwhites for all years studied and the trend remained unchanged in 1973. Rates for the year were: white males, 13.4;

white females, 16.1; nonwhite males, 11.2; and nonwhite females, 13.9. The total number of deaths in 1973 was 748.

Agewise, rates have reflected downward trends since 1970 for all age groups over 55 years except the 65-74 age group whose rate increased from 73.7 in 1970 to 79.7 in 1973. This was a notable increase since the largest number of colon and rectum cancer deaths usually occur in this age group. The actual numerical increase was from 198 deaths in 1970 to 232 in 1973.

County death rates for colon-rectum cancer ranged from 0.0 to 39.5 during 1971-73 (Figure 11.A). Highest rates were generally observed for residents of some western and northeastern counties with central portions of the State being relatively free of significantly high rates. As a whole, adjustment for age, race, and sex differences among county populations did not substantially change the high rates; all counties with level-four actual rates had level-three or level-four adjusted rates (Figure 11.B). However, the adjustment resulted in higher rates for some counties including Cumberland and Onslow. All counties with level-four adjusted rates had conditions other than age, race, and sex factors contributing to high mortality during 1971-73.

TABLE 11

MORTALITY STATISTICS FOR 1973 AND 1971-1973

NORTH CAROLINA RESIDENTS

CANCER OF THE COLON AND RECTUM

GEOGRAPHICAL AREA	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
NORTH CAROLINA	748	14.30	14.08	14.08
DHR REGIONS				
EASTERN	149	13.27	12.61	13.30
SOUTH CENTRAL	149	12.78	13.13	15.01
NORTH CENTRAL	181	15.73	15.50	15.12
WESTERN	269	15.02	14.71	13.69
COUNTIES				
ALAMANCE	14	13.96	12.40	12.57
ALEXANDER	3	14.50	14.68	16.02
ALLEGHANY	3	35.72	28.01	54.15
ANSON	3	12.78	15.56	12.36
ASHE	3	15.52	6.82	3.84
AVERY	5	37.15	22.52	57.12
BEAUFORT	3	8.37	17.60	15.08
BERTIE	4	19.16	20.74	17.85
BLADEN	8	29.98	19.95	18.71
BRUNSWICK	2	7.15	8.64	8.66
BUNCOMBE	27	18.39	18.39	12.70
BURKE	3	4.82	6.45	5.36
CABARRUS	8	10.44	14.39	12.84
CALDWELL	4	6.80	8.03	7.97
CAMDEN	0	0.00	0.00	0.00
CARTERET	3	9.14	10.21	13.54
CASWELL	6	31.53	17.44	16.11
CATAWBA	13	13.68	14.51	14.23
CHATHAM	4	13.48	19.02	16.70
CHEROKEE	2	11.93	7.99	5.33
CHOWAN	7	64.39	36.85	36.54
CLAY	1	18.88	12.58	6.21
CLEVELAND	16	21.48	20.19	20.05
COLUMBUS	6	12.45	9.69	10.84
CRAVEN	7	10.85	11.94	16.63
CUMBERLAND	16	7.42	7.48	16.50
CURRITUCK	1	12.51	17.32	12.68
DARE	2	26.07	17.57	12.43
DAVIDSON	12	12.13	15.27	17.19
DAVIE	2	10.35	12.11	9.64
DUPLIN	7	18.41	16.63	15.79
DURHAM	19	14.01	18.32	17.55
EDGECOMBE	7	13.21	13.29	12.60
FORSYTH	32	14.45	15.61	16.02
FRANKLIN	4	14.44	18.12	13.23
GASTON	28	18.48	13.03	12.74
GATES	2	23.82	39.52	32.70
GRAHAM	1	16.35	5.31	4.01
GRANVILLE	6	18.35	18.22	14.49
GREENE	1	6.69	11.05	13.73
GUILFORD	50	16.80	15.35	15.94
HALIFAX	6	11.20	9.30	9.22
HARNETT	12	23.35	20.27	20.75

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

MORTALITY STATISTICS FOR 1973 AND 1971-1973, NORTH CAROLINA RESIDENTS
CANCER OF THE COLON AND RECTUM CONT'D.

COUNTIES (CONT'D)	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
HAYWOOD	4	9.31	10.15	6.77
HENDERSON	10	22.62	22.69	15.84
HERTFORD	4	17.22	15.75	15.49
HOKE	3	17.54	15.68	18.60
HYDE	0	0.00	24.51	17.44
IREDELL	13	17.11	18.66	17.24
JACKSON	4	17.96	10.48	17.03
JOHNSTON	7	11.13	13.81	12.82
JONES	0	0.00	6.84	7.13
LEE	4	12.48	16.86	16.36
LFNOIR	6	10.53	12.33	12.18
LINCOLN	6	17.22	11.64	9.89
MCDOWELL	5	16.12	24.72	27.68
MACON	2	11.74	11.92	6.88
MADISON	1	6.35	10.47	5.61
MARTIN	3	12.42	12.32	12.42
MECKLENBURG	47	12.86	14.30	16.56
MITCHELL	3	22.42	9.85	6.06
MONTGOMERY	4	20.88	22.47	18.75
MOORE	8	19.45	16.36	13.50
NASH	6	9.90	15.44	13.95
NEW HANOVER	18	20.21	17.06	17.07
NORTHAMPTON	5	21.56	11.33	10.75
ONSLOW	8	8.07	5.01	15.01
ORANGE	4	6.30	12.36	16.54
PAMLICO	1	10.69	10.65	9.28
PASQUOTANK	3	10.96	12.20	11.94
PENDER	3	16.60	18.39	19.94
PERQUIMANS	2	23.83	11.81	8.76
PERSON	5	19.03	13.96	13.82
PITT	13	17.34	12.45	13.86
POLK	4	33.50	39.06	19.98
RANDOLPH	11	13.87	13.54	14.35
RICHMOND	4	9.86	11.54	10.44
ROBESON	14	16.06	11.53	15.21
ROCKINGHAM	9	12.05	15.69	13.91
ROWAN	19	21.05	15.81	13.24
RUTHERFORD	9	18.33	21.77	18.48
SAMPSON	5	10.61	8.53	7.47
SCOTLAND	1	3.58	10.85	11.84
STANLY	7	15.98	15.23	13.19
STOKES	2	7.82	14.54	11.65
SURRY	10	18.77	13.87	14.44
SWAIN	2	21.06	17.93	18.36
TRANSYLVANIA	1	5.04	10.09	8.14
TYRRELL	1	25.68	17.11	16.74
UNION	7	12.02	12.18	12.49
VANCE	8	25.39	19.91	19.46
WAKE	33	13.49	12.05	14.43
WARREN	6	35.36	35.66	26.40
WASHINGTON	0	0.00	7.25	8.22
WATAUGA	3	12.21	10.89	10.00
WAYNE	11	12.49	8.73	11.31
WILKES	5	9.57	9.66	11.62
WILSON	7	12.22	13.29	13.40
YADKIN	4	15.36	16.85	11.90
YANCEY	0	0.00	10.16	6.38

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

CANCER OF THE COLON AND RECTUM

NORTH CAROLINA 1971 - 1973

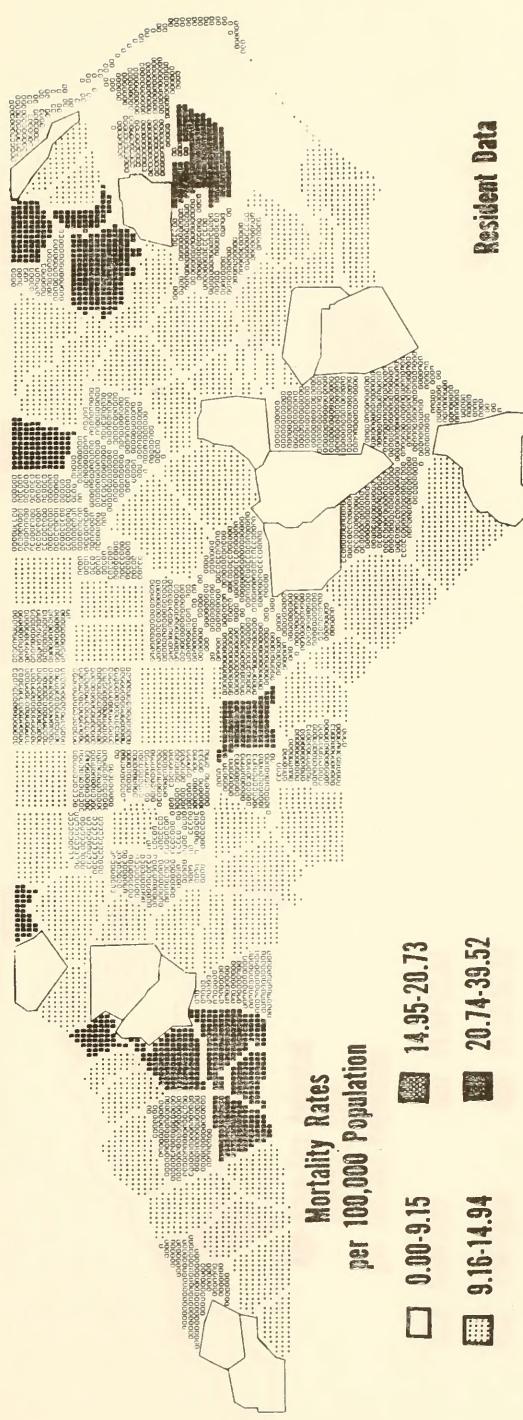


FIGURE 11.A

CANCER OF THE COLON AND RECTUM

NORTH CAROLINA 1971 - 1973

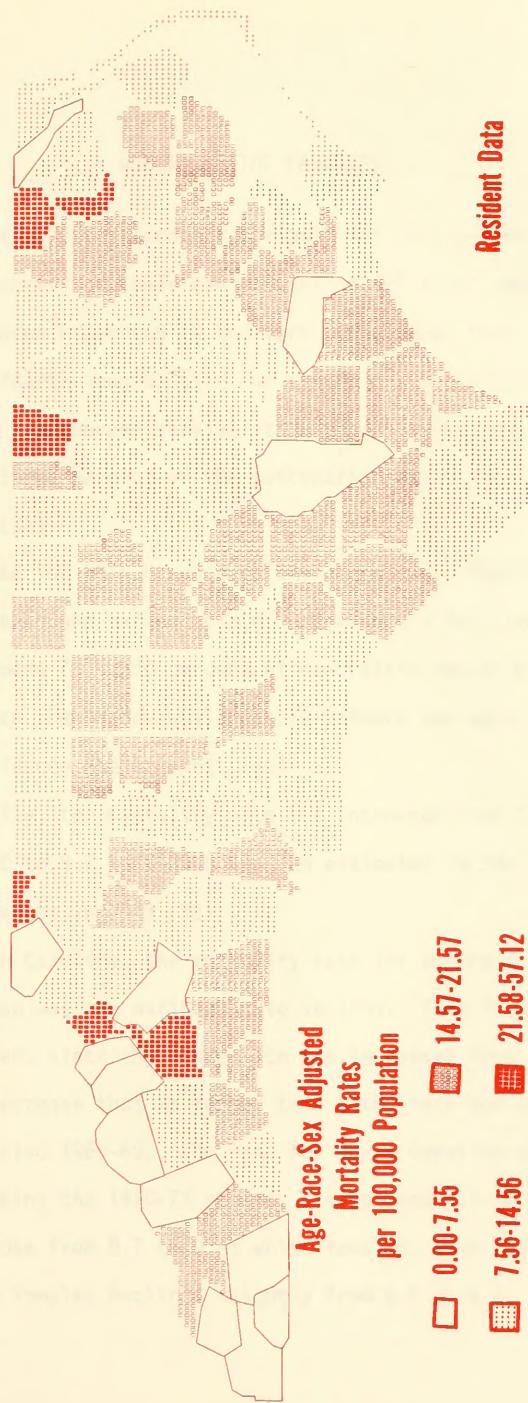


FIGURE 11.B

CANCER OF THE PANCREAS

Pancreatic cancer accounts for only two to 3 percent of all forms of cancer but accounts for about ten percent of all fatal abdominal malignant disease (30). Cancer reporting in New York State shows that cancer of the pancreas was the fourth leading site for cancer deaths, killing 1,000 New Yorkers in 1970. The average survival time from date of diagnosis was 4.3 months with only three percent of the pancreatic cancer patients surviving for three years. (31)

The cause for this disease is still unknown. People suffering from it are prone to rapid and marked loss of weight and a dull and boring pain in the back occurs among 70 to 80 percent of pancreatic cancer patients. Men are affected more often than women while people between the ages of 35 and 70 are in the higher incidence age bracket. (30)

Nationally, the mortality rate has increased from 7.6 per 100,000 population in 1960 to 8.7 in 1969 (29). An estimated 19,200 Americans died of this form of cancer in 1973 (32).

In North Carolina, the mortality rate for pancreatic cancer was lower in 1973 at 8.3 than was the national rate in 1969. This is not particularly reassuring, however, since the State rate has increased from 7.1 to 8.3 in only three years, an increase that is larger than both State and national increases for the entire period 1960-69. The rate for North Carolina nonwhite males increased most during the 1970-73 period, rising from 6.3 to 10.5. The rate for white males rose from 8.7 to 9.8; white females, from 5.9 to 6.8; but the rate for nonwhite females declined slightly from 6.7 to 6.3. Altogether, these

changes have served to decrease the race differential and increase the sex differential in North Carolina's pancreatic cancer mortality. Age-specific changes since 1970 have involved a rate reduction for ages 55-64 but other age groups above 45 have experienced rate increases. The rate for persons 75-84 increased most (46%) during the three-year period.

As shown in Figure 12.A, both the North Central and South Central regions were found to be relatively free of excessive pancreatic cancer during 1971-73. Both level-one and level-four rates occurred primarily in the East and West. Among counties with level-four rates, adjustment for age, race, and sex factors (Figure 12.B) resulted in substantially reduced rates for Cherokee, Alleghany, and Northhampton counties, but the rate for Onslow County increased considerably. The near doubling of the 1971-73 rate for Madison County after adjustment (Table 12) was due to the death of one non-white male in a county with a small nonwhite population.

(12) Although non-adjusted county rates of

1000,000 were 6.7 per 100,000 for black females and 7.6 for white females

both adjusted rates were 6.8 (6.7 for black females and 7.8 for white females)

(13) Both non-adjusted and adjusted

black female rates of 1000,000 were 7.6 and 7.8 respectively

black male rates of 1000,000 were 12.8 and 12.9 respectively

(14) The adjusted rate for black females was 7.8 and for white females 7.6

adjusted rate for black males was 12.8 and for white males 12.9

(15) The adjusted rate for black females was 7.8 and for white females 7.6

adjusted rate for black males was 12.8 and for white males 12.9

(16) The adjusted rate for black females was 7.8 and for white females 7.6

adjusted rate for black males was 12.8 and for white males 12.9

TABLE 12

MORTALITY STATISTICS FOR 1973 AND 1971-1973

NORTH CAROLINA RESIDENTS

CANCER OF THE PANCREAS

GEOGRAPHICAL AREA	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
NORTH CAROLINA	432	8.26	7.45	7.45
DHR REGIONS				
EASTERN	97	8.64	8.05	8.23
SOUTH CENTRAL	74	6.35	6.14	6.95
NORTH CENTRAL	110	9.56	8.01	7.84
WESTERN	151	8.43	7.56	7.36
COUNTIES				
ALAMANCE	12	11.97	8.71	8.69
ALFAXANDER	2	9.66	3.26	2.86
ALLEGHANY	4	47.63	16.00	7.77
ANSON	4	17.04	14.14	9.82
ASHE	3	15.52	10.23	6.13
AVERY	1	7.43	5.00	4.20
BEAUFORT	6	16.75	12.04	8.97
BERTIE	3	14.37	7.97	8.45
BLADEN	2	7.49	9.97	10.07
BRUNSWICK	1	3.57	4.94	3.97
BUNCOMBE	9	6.13	7.26	5.96
BURKE	2	3.21	6.45	5.53
CABARRUS	8	10.44	6.98	5.88
CALDWELL	3	5.10	6.30	5.87
CAMDEN	1	17.95	6.00	4.00
CARTERET	2	6.09	7.14	5.59
CASWELL	3	15.76	10.46	10.96
CATAWBA	5	5.26	5.66	5.81
CHATHAM	1	3.37	4.47	3.89
CHEROKEE	3	17.90	13.98	6.87
CHOWAN	1	9.19	15.35	10.22
CLAY	0	0.00	0.00	0.00
CLEVELAND	6	8.05	10.31	10.43
COLUMBUS	3	6.22	4.15	4.30
CRAVEN	3	4.65	4.67	5.56
CUMBERLAND	6	2.78	2.96	6.70
CURRITUCK	0	0.00	0.00	0.00
DARE	2	26.07	8.78	13.38
DAVIDSON	7	7.07	7.80	7.41
DAVIE	5	25.89	13.84	14.63
DUPLIN	5	13.15	10.50	10.75
DURHAM	13	9.59	8.17	7.80
EDGECOMBE	6	11.32	8.86	10.04
FORSYTH	23	10.38	8.33	8.78
FRANKLIN	2	7.22	4.83	3.22
GASTON	11	7.26	5.96	6.20
GATES	0	0.00	0.00	0.00
GRAHAM	0	0.00	0.00	0.00
GRANVILLE	2	6.11	8.09	5.96
GREENE	0	0.00	2.21	1.24
GUILFORD	27	9.07	7.56	7.85
HALIFAX	5	9.33	7.44	7.29
HARNETT	1	1.94	5.88	5.94

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

MORTALITY STATISTICS FOR 1973 AND 1971-1973, NORTH CAROLINA RESIDENTS
CANCER OF THE PANCREAS CONT'D.

COUNTIES (CONT'D)	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
HAYWOOD	5	11.64	10.15	11.12
HENDERSON	1	2.26	9.07	5.20
HERTFORD	1	4.30	11.45	10.03
HOKE	1	5.84	5.88	5.89
HYDE	1	18.79	6.12	4.81
IREDELL	5	6.58	10.66	10.38
JACKSON	1	4.49	5.99	5.09
JOHNSTON	5	7.95	7.44	6.72
JONES	0	0.00	3.42	1.50
LEE	4	12.48	10.54	10.54
LENOIR	5	8.78	8.81	9.14
LINCOLN	2	5.74	4.85	6.99
MCDOWELL	1	3.22	6.45	4.61
MACON	1	5.87	5.96	2.85
MADISON	1	6.35	16.75	33.11
MARTIN	1	4.14	5.47	3.67
MECKLENBURG	31	8.48	6.18	7.27
MITCHELL	1	7.47	4.92	2.77
MONTGOMERY	2	10.44	10.37	8.61
MOORE	5	12.16	9.00	7.55
NASH	4	6.60	7.72	7.33
NEW HANOVER	12	13.47	11.00	10.85
NORTHHAMPTON	1	4.31	12.74	6.98
ONSLOW	4	4.03	4.68	13.05
ORANGE	3	4.72	4.83	6.04
PAMLICO	0	0.00	7.10	7.14
PASQUOTANK	3	10.96	13.42	10.09
PENDER	1	5.53	5.51	4.93
PERQUIMANS	2	23.83	7.87	6.64
PERSON	4	15.22	7.61	6.66
PITT	10	13.34	9.34	11.00
POLK	2	16.75	13.95	8.17
RANDOLPH	6	7.56	8.46	10.92
RICHMOND	3	7.40	8.24	7.69
ROBESON	7	8.03	6.15	5.81
ROCKINGHAM	9	12.05	9.41	8.70
ROWAN	10	11.08	8.82	7.14
RUTHERFORD	9	18.33	12.24	12.81
SAMPSON	2	4.24	5.69	4.99
SCOTLAND	2	7.16	7.23	8.02
STANLY	4	9.13	9.13	8.75
STOKES	2	7.82	6.60	5.29
SURRY	2	3.75	6.30	4.53
SWAIN	0	0.00	7.17	8.48
TRANSYLVANIA	4	20.16	6.73	5.60
TYRRELL	0	0.00	8.55	3.56
UNION	6	10.30	8.12	8.58
VANCE	3	9.52	7.33	5.54
WAKE	13	5.31	5.12	6.20
WARREN	0	0.00	7.92	4.15
WASHINGTON	0	0.00	4.83	2.96
WATAUGA	2	8.14	9.52	8.32
WAYNE	4	4.54	6.07	7.44
WILKES	7	13.40	7.73	6.29
WILSON	10	17.47	15.61	15.29
YADKIN	3	11.52	6.48	4.58
YANCEY	1	7.60	10.16	5.70

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

CANCER OF THE PANCREAS NORTH CAROLINA 1971 - 1973

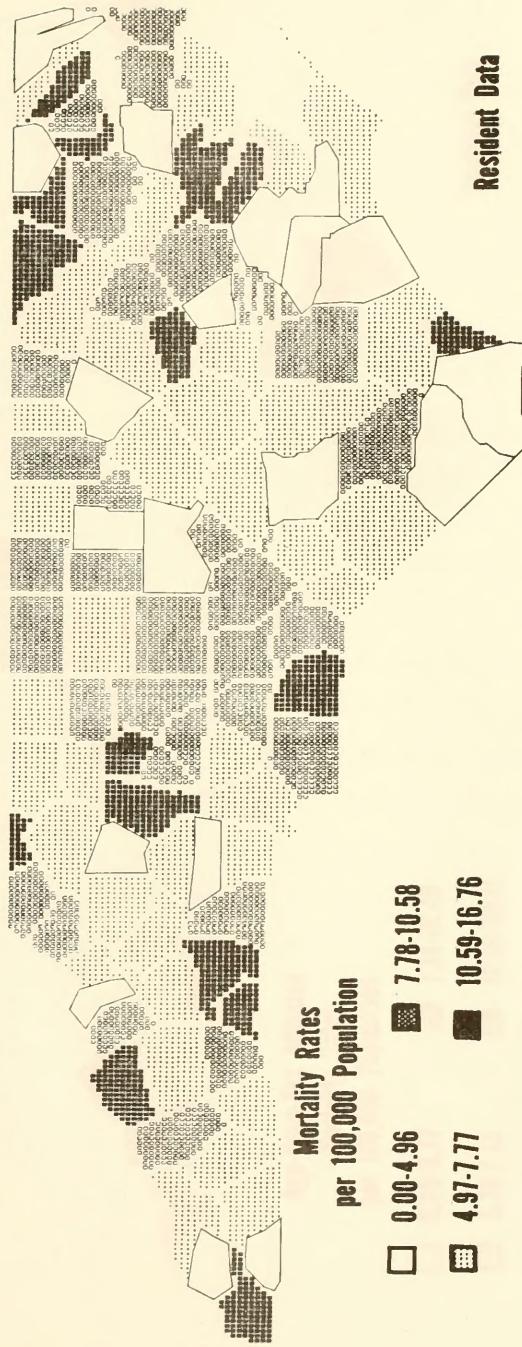


FIGURE 12.A

CANCER OF THE PANCREAS

NORTH CAROLINA 1971 - 1973

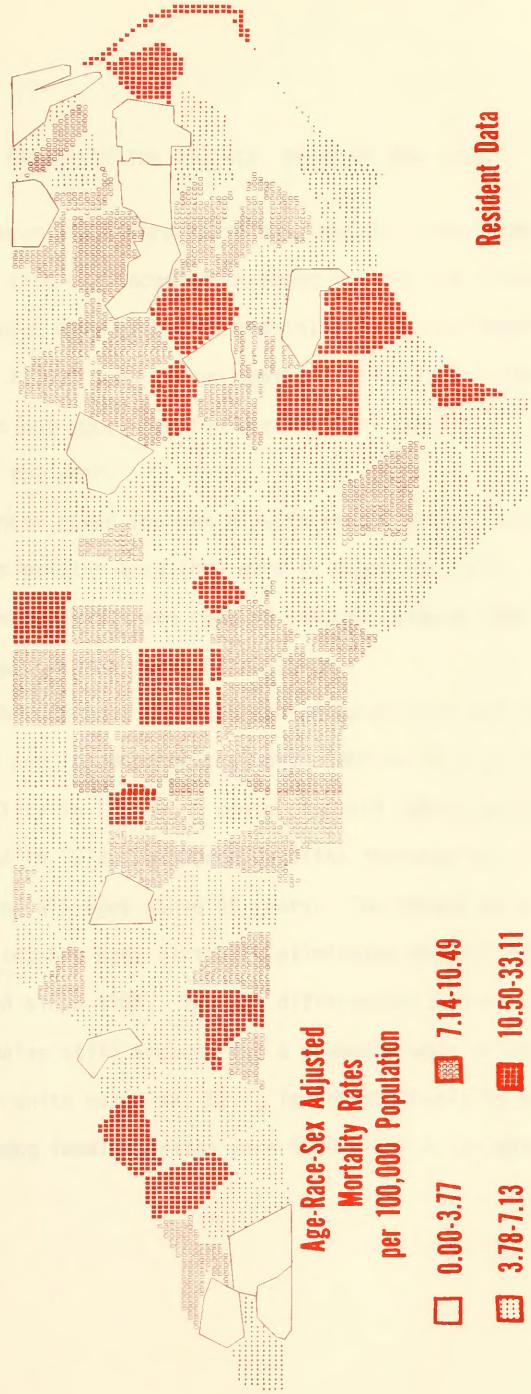


FIGURE 12.B

CANCER OF THE TRACHEA, BRONCHUS AND LUNG

Lung cancer kills more Americans than any other type of cancer. It is the leading site of cancer death among men and the third leading site among women, exceeded only by breast and colon (27). Nationally, there were an estimated 72,000 lung cancer deaths in 1973 (32). The North Carolina toll reached 1,585 and accounted for one-fifth of the State's total cancer fatalities during the year.

Lung cancer rates for men have increased to the point that they are fourteen times greater than they were 40 years ago (23). Nationally, the total lung cancer death rate rose 50 percent between 1960 and 1969, from 20.3 per 100,000 population to 30.6 (1,29).

In North Carolina, the lung cancer death rate has increased 345 percent, from 6.8 per 100,000 population in 1960 to 30.3 in 1973. Based on lung cancer mortality in 1968 when cause of death coding procedures were the same as those used in 1973, the North Carolina increase has involved all race-sex groups and all ages above 45 years. The former wide gap between whites and nonwhites has been virtually eliminated as the rate for nonwhites has nearly doubled since 1968. The sex differential has also decreased slightly though males still account for a preponderance of the mortality. The 1973 rate for white males was 52.7, followed closely by a nonwhite male rate of 51.5. Among females, rates were 10.0 and 6.8 for whites and nonwhites respectively.

The 1971-73 county death rates for trachea, bronchus and lung cancer are mapped in Figure 13.A. Highest rates were generally observed for residents of coastal counties, while a cluster of low rates occurred in the northwest. The individual county rates ranged from 0.0 to 87.9, with the average county rate at 29.7.

Adjustment for age, race, and sex factors lowered overall rates for the Western and North Central regions while increasing rates for the Eastern and South Central regions (Table 13). Specifically, adjustment revealed significantly high and unexplained mortality for Martin, Pitt, Onslow, and New Hanover counties in the East, and Cumberland County in the South Central Region (Figure 13.B). In the Western Region, a substantially reduced rate for Henderson indicates that high actual mortality in that county reflected generally unfavorable age, race, and sex factors in its population and that other conditions were relatively favorable. Table 13 shows the exact rates by region and county and Figure 13.B depicts the geographic distribution for lung cancer adjusted rates. All counties with level-four adjusted rates should investigate the causes of their unexplained and excessive mortality.

The average life expectancy for a person diagnosed as having lung cancer is only six to 9 months and only 20 percent live more than a year (30). The disease is reportedly 20 times more common in heavy smokers, and the sex differential in mortality is decreasing as women represent a proportionately higher percentage of the smoking population (15).

No screening method has been effective in detecting lung cancer in its *in situ* state. Due to the large amount of blood constantly circulating through the lungs and their central position in the body, lung cancer spreads

(metastasizes) to other parts of the body very quickly. Thus, lung cancer is hard to detect before it has spread, and the cure rate remains very low. Nationally, only about nine percent of the diagnosed lung cancer cases are being saved. (23)

Although smoking is the major factor in lung cancer mortality (27), other elements in the environment may serve to increase these rates. Radioactive ores, asbestos, nickel, and chromate are examples of substances which have proved to increase lung cancer rates among people in close contact with them. "Multiple factor relationships have been observed in cigarette smokers who are also exposed to either asbestos or radon. Individuals exposed to the interaction of these elements have a higher incidence of lung cancer than people exposed to only one factor." Many other atmospheric cancer-causing agents (carcinogens) associated with lung cancer have been listed in the literature. (33)

So far, no definite relationship between air pollution and mortality has been established in North Carolina, but it is noted that the geographical pattern for lung cancer is similar to that observed for other respiratory diseases, especially in the East where lung cancer mortality is most prevalent. By comparing Figures 13.B and 21.B, the distribution of adjusted lung cancer rates can be seen against the pattern for bronchitis, emphysema, and asthma. Although available measures of "particulate concentration" and "particulate emission" did not appear correlated with the death rates for bronchitis, emphysema and asthma, it is suggested that other measures of air pollution be tested for causal relationships to respiratory disease. It is further suggested that the number of air quality sampling stations in the State be increased to

provide more complete coverage of populated areas, particularly those in which respiratory disease mortality is as high as the level-four rates of Figures 13.B and 21.B.

TABLE 13

MORTALITY STATISTICS FOR 1973 AND 1971-1973

NORTH CAROLINA RESIDENTS

CANCER OF THE TRACHEA, BRONCHUS AND LUNG

GEOGRAPHICAL AREA	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
NORTH CAROLINA	1585	30.31	28.18	28.18
OHR REGIONS				
EASTERN	381	33.95	30.33	31.96
SOUTH CENTRAL	320	27.46	26.34	30.20
NORTH CENTRAL	338	29.38	28.83	27.93
WESTERN	546	30.49	27.59	26.05
COUNTIES				
ALAMANCE	28	27.93	30.51	29.29
ALEXANDER	10	48.34	22.84	19.51
ALLEGHANY	1	11.90	20.01	11.15
ANSON	8	34.08	21.22	19.93
ASHE	0	0.00	17.05	10.37
AVERY	4	29.72	35.04	25.05
BEAUFORT	20	55.84	50.96	43.33
BERTIE	9	43.11	28.72	30.48
BLAEN	7	26.23	21.20	20.58
BRUNSWICK	8	28.61	34.58	32.81
BUNCOMBE	50	34.06	34.28	29.56
BURKE	15	24.12	18.81	16.89
CABARRUS	33	43.08	33.16	29.11
CALOWELL	19	32.34	25.23	28.66
CAMDEN	0	0.00	12.00	10.52
CAR TERET	11	33.51	38.80	33.13
CASWELL	6	31.53	34.89	33.12
CATAWBA	32	33.68	24.43	22.68
CHATHAM	12	40.46	32.45	29.65
CHEROKEE	3	17.90	25.97	15.93
CHOWAN	5	45.99	33.78	32.58
CLAY	0	0.00	0.00	0.00
CLEVELAND	21	28.19	23.77	23.12
COLUMBUS	15	31.12	24.24	22.81
CRAVEN	14	21.71	23.36	34.11
CUMBERLAND	34	15.77	17.61	36.03
CURRITUCK	4	50.06	34.65	23.71
DARE	10	130.39	87.87	64.47
DAVISON	26	26.29	26.80	26.16
DAVIE	5	25.89	19.03	14.77
DUPLIN	10	26.30	35.89	31.15
OURHAM	45	33.19	34.42	34.50
EOGECOMBE	27	50.95	37.34	35.09
FORSYTH	58	26.19	28.04	29.31
FRANKLIN	8	28.89	36.24	35.05
GASTON	39	25.74	28.06	29.71
GATES	5	59.55	27.66	25.95
GRAHAM	2	32.70	21.25	16.16
GRANVILLE	16	48.94	33.40	30.84
GREENE	4	26.77	26.52	29.34
GUILFORD	80	26.89	26.86	28.14
HALIFAX	12	22.41	24.80	24.55
HARNETT	18	35.02	35.97	35.43

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

MORTALITY STATISTICS FOR 1973 AND 1971-1973, NORTH CAROLINA RESIDENTS
CANCER OF THE TRACHEA, BRONCHUS AND LUNG CONT'D.

COUNTIES (CONT'D)	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
HAYWOOD	13	30.27	22.65	20.42
HENDERSON	19	42.98	43.11	26.43
HERTFORD	9	38.75	31.51	24.46
HOKE	5	29.24	19.60	21.14
HYDE	1	18.79	42.90	35.27
IREDELL	20	26.32	23.55	21.62
JACKSON	7	31.43	22.46	17.66
JOHNSTON	17	27.05	25.51	24.92
JONES	4	41.63	30.82	24.93
LEE	11	34.32	25.30	25.27
LENOIR	17	29.86	30.54	31.69
LINCOLN	15	43.06	34.94	32.73
MCDOWELL	11	35.46	37.63	33.50
MACON	5	29.36	37.75	20.15
MADISON	3	19.07	23.04	13.54
MARTIN	13	53.86	35.59	36.55
MECKLENBURG	122	33.40	28.88	33.71
MITCHELL	8	59.80	34.50	19.04
MONTGOMERY	3	15.66	17.28	15.42
MOORE	20	48.64	38.45	32.96
NASH	23	37.95	28.68	27.67
NEW HANOVER	34	38.18	36.03	36.13
NORTHHAMPTON	11	47.43	32.57	28.17
ONSLOW	12	12.10	15.05	40.14
ORANGE	8	12.60	12.90	18.07
PAMLICO	4	42.76	35.51	28.92
PASQUOTANK	18	65.78	48.80	44.64
PENDER	6	33.20	34.94	32.02
PERQUIMANS	1	11.91	35.44	27.28
PERSON	12	45.67	33.00	32.29
PITT	30	40.02	32.48	38.00
POLK	4	33.50	30.69	21.36
RANDOLPH	15	18.92	20.31	18.29
RICHMOND	13	32.07	34.64	32.27
ROBESON	22	25.24	24.98	32.17
ROCKINGHAM	31	41.52	42.60	37.52
ROWAN	24	26.59	28.69	23.06
RUTHERFORD	17	34.64	28.57	24.22
SAMPSON	17	36.10	34.85	30.83
SCOTLAND	3	10.74	24.11	28.57
STANLY	15	34.25	28.18	26.68
STOKES	13	50.88	30.40	33.50
SURRY	17	31.91	27.11	26.55
SWAIN	5	52.67	32.28	28.57
TRANSYLVANIA	5	25.21	26.92	21.28
TYRRELL	2	51.36	85.57	53.47
UNION	8	13.73	23.21	23.21
VANCE	11	34.91	37.73	34.64
WAKE	77	31.48	28.53	34.51
WARREN	7	41.26	27.74	24.84
WASHINGTON	6	43.95	19.34	20.07
WATAUGA	3	12.21	14.97	13.00
WAYNE	18	20.45	18.22	22.84
WILKES	9	17.23	12.24	14.08
WILSON	18	31.44	30.64	30.93
YADKIN	5	19.20	22.03	20.10
YANCEY	4	30.41	35.58	22.25

* SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

CANCER OF THE TRACHEA, BRONCHUS AND LUNG

NORTH CAROLINA 1971 - 1973

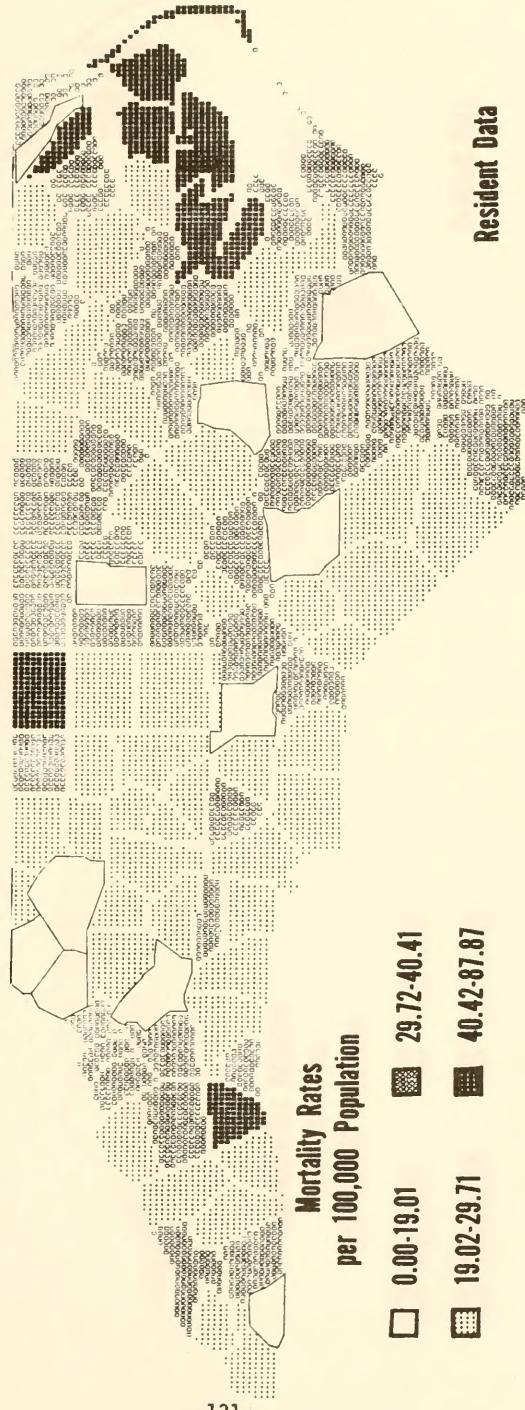


FIGURE 13.A

CANCER OF THE TRACHEA, BRONCHUS AND LUNG
NORTH CAROLINA 1971 - 1973

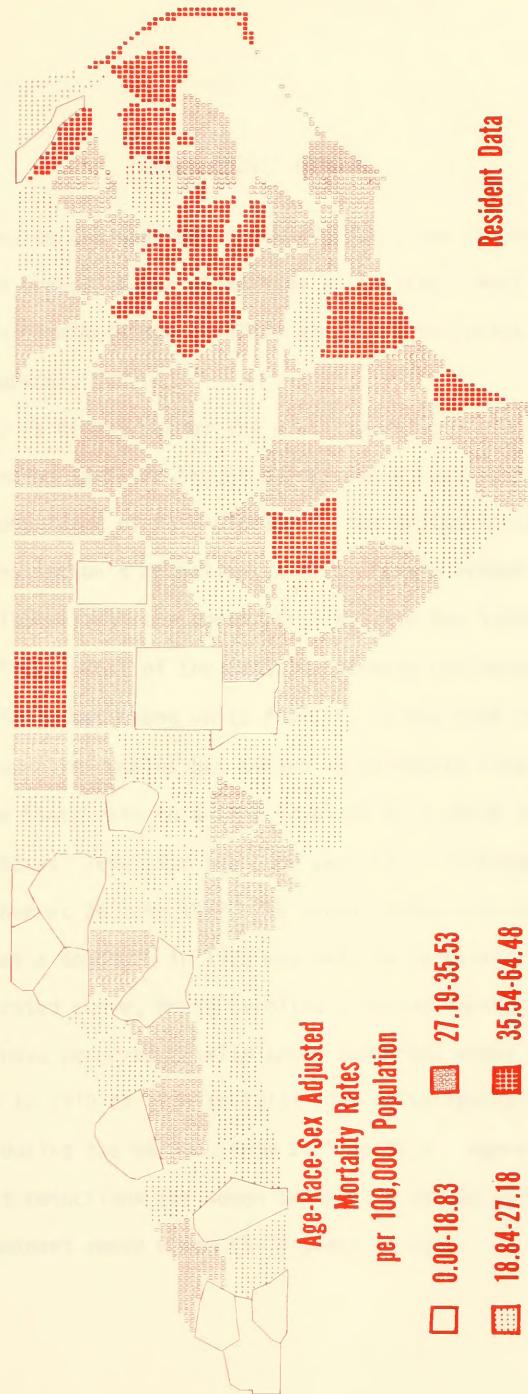


FIGURE 13.B

FEMALE BREAST CANCER

According to the American Cancer Society, one of every fifteen women will develop breast cancer at some point in life. Most breast cancers are found in women of middle age or older since the incidence increases rapidly after menopause. (15)

Not only is breast cancer the most common site of cancer in women, it is also the leading cause of cancer deaths among women (15). In 1973, a total of 31,850 women died of this disease in the United States (2).

While the nation's mortality rate for female breast cancer increased 13 percent since 1960 (1,2), the North Carolina rate has increased an estimated 44 percent since 1960. Most of the State's increase had occurred by 1968 and largely involved increases among white females. Since that time, an increase in the rate for nonwhite females has served to eliminate race differentials and to elevate the State rate to a 1973 level of 22.8 which is still less than the 29.6 United States' level for the same year (2). Although North Carolina's rate was even higher at 24.1 in 1972, the annual rates have been marked by some fluctuation so that a downturn in 1973 may only be temporary.

As indicated above, North Carolina's recent increases in breast cancer mortality have occurred chiefly among nonwhites whose rate increased by a third from 16.5 in 1970 to 22.4 in 1973. The white female rate rose less than six percent during the period, from 21.7 to 22.9. Age-specific rates since 1970 reveal slight reductions for women between 35 and 54 with increases thereafter being predominant among women 65-74 years of age.

Approximately 95 percent of all breast cancer patients discover their own cancers through breast self-examination. Unfortunately, 60 percent of these cancers have already spread to the axillary lymph nodes, a growth stage where the five-year survival rate is only 40-45 percent. (26) In order to increase the chances for early detection of breast cancer, the American Cancer Society recommends that high school girls be taught self-examination so that it will become a life-long habit. A woman should never delay reporting a lump or thickening in her breast to a doctor. Although most breast biopsies are benign (65-80%), malignancies must be surgically removed as soon as possible to increase the chance for survival. (27)

Due in part to widening acceptance of regular checkups with the highly efficient "Pap test," mortality due to cervical cancer has been significantly reduced (27). The question arises, if increased numbers of women are receiving regular checkups, why also has breast cancer mortality not been reduced? The Chronic Disease Branch of the Division of Health Services suggests that (a) Pap tests are not always accompanied by breast examinations, (b) the Pap test population largely includes women below the high-risk ages for breast cancer, and (c) many women still do not have regular examinations because of fear and anxiety concerning breast cancer and possible breast removal. Thus, the Chronic Disease Branch recommends the performing and teaching of breast examination with every Pap test, greater outreach to women above age 35, and more extensive education efforts.

Regarding breast cancer in men, although rare, it is often fatal due to late recognition. Two of North Carolina's total 612 breast cancer victims in 1973 were men, and an estimated 250 American men died of breast cancer in 1974 (23).

High female breast cancer mortality occurred in all sections of the State during 1971-73 with seven of the 15 level-four rates occurring in counties of the Eastern Region (Figure 14.A). Only in Dare County did adjustment for age and race factors result in a substantial reduction in the rate (Figure 14.B). This suggests that other counties whose high rates did not involve small numbers and random fluctuation may need to investigate and strengthen their programs of female-specific diagnosis and treatment including the teaching of breast self-examination. This may apply equally to all counties whose adjusted rates were substantially higher than their actual rates except those rates which are based on small numbers. In the case of Ashe County, the extremely high adjusted rate was the result of one nonwhite death in a county of few nonwhite women.

TABLE 14

MORTALITY STATISTICS FOR 1973 AND 1971-1973

NORTH CAROLINA RESIDENTS

FEMALE BREAST CANCER

GEOGRAPHICAL AREA	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
NORTH CAROLINA	610	22.79	22.72	22.72
DHR REGIONS				
EASTERN	124	21.94	22.34	22.89
SOUTH CENTRAL	125	21.42	20.81	22.80
NORTH CENTRAL	161	26.84	25.29	24.87
WESTERN	200	21.56	22.49	22.20
COUNTIES				
ALAMANCE	12	23.05	26.49	25.58
ALEXANDER	0	0.00	6.41	5.90
ALLEGHANY	1	22.83	7.68	5.96
ANSON	0	0.00	21.65	15.60
ASHE	1	10.14	23.43	64.87
AVERY	1	14.88	30.09	23.27
BEAUFORT	5	26.62	37.16	32.38
BERTIE	2	18.21	21.29	17.38
BLADEN	5	36.63	17.07	17.20
BRUNSWICK	2	14.15	19.59	20.45
BUNCOMBE	25	32.38	29.38	25.74
BURKE	9	28.11	25.06	21.42
CABARRUS	9	22.53	22.61	20.91
CALDWELL	4	13.25	15.64	14.64
CAMDEN	1	34.36	23.02	23.35
CARTERET	4	24.04	26.18	28.60
CASWELL	2	20.74	20.69	20.44
CATAWBA	8	16.28	21.23	24.90
CHATHAM	6	39.80	26.46	25.65
CHEROKEE	2	23.04	15.45	10.84
CHOWAN	3	53.82	23.98	14.60
CLAY	2	72.78	24.33	15.97
CLEVELAND	6	15.63	17.42	17.50
COLUMBUS	6	24.10	26.85	28.02
CRAVEN	8	25.87	19.48	24.85
CUMBERLAND	11	11.57	13.06	20.45
CURRITUCK	1	24.78	17.19	12.45
DARE	1	25.26	34.10	20.35
DAVIDSON	11	21.83	21.33	23.74
DAVIE	1	10.07	13.47	12.95
DUPLIN	5	25.38	22.00	20.74
DURHAM	13	18.17	24.90	24.87
EDGECOMBE	6	21.59	24.17	27.42
FORSYTH	25	21.38	22.41	22.98
FRANKLIN	6	41.72	30.30	27.92
GASTON	19	24.17	23.44	22.38
GATES	1	23.74	31.55	23.64
GRAHAM	2	65.21	21.17	16.36
GRANVILLE	3	18.09	15.97	16.27
GREENE	2	26.05	17.24	18.15
GUILFORD	55	34.93	28.40	29.53
HALIFAX	5	17.93	27.44	23.72
HARNETT	1	3.83	16.75	16.80

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

MORTALITY STATISTICS FOR 1973 AND 1971-1973, NORTH CAROLINA RESIDENTS
FEMALE BREAST CANCER CONT'D.

COUNTIES (CONT'D)	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
HAYWOOD	2	9.03	16.68	12.18
HENDERSON	11	47.62	46.36	48.49
HERTFORD	3	24.67	13.70	16.83
HOKE	1	11.76	7.89	8.89
HYDE	0	0.00	11.90	13.55
IREDELL	6	15.19	16.26	16.35
JACKSON	1	8.89	23.77	25.91
JOHNSTON	7	21.42	23.54	22.07
JONES	1	20.30	20.09	21.30
LEE	0	0.00	10.14	10.11
LENOIR	8	26.65	18.96	21.11
LINCOLN	2	11.21	22.77	22.40
MCDOWELL	6	37.40	24.97	19.28
MACON	1	11.43	15.50	8.69
MADISON	1	12.37	16.34	11.33
MARTIN	2	15.91	23.70	23.78
MECKLENBURG	43	22.49	21.68	23.89
MICHELL	3	43.53	23.94	16.74
MONTGOMERY	8	80.87	36.88	31.51
MOORE	7	32.51	18.76	16.01
NASH	6	18.94	21.13	20.52
NEW HANOVER	8	17.23	16.00	15.68
NORTHAMPTON	6	51.27	42.13	37.70
ONSLOW	2	5.28	12.27	23.40
ORANGE	7	22.74	17.78	21.16
PAMLICO	1	20.56	27.38	25.59
PASQUOTANK	3	21.20	33.05	29.03
PENDER	2	21.86	14.53	15.34
PERQUIMANS	0	0.00	53.43	43.24
PERSON	2	14.81	14.84	15.23
PITT	6	15.30	14.47	16.34
POLK	2	31.36	36.63	25.48
RANDOLPH	16	39.49	26.52	29.95
RICHMOND	10	47.32	31.67	29.45
ROBESON	10	22.13	17.06	19.83
ROCKINGHAM	8	20.49	21.48	19.80
ROWAN	4	8.56	22.77	19.02
RUTHERFORD	10	39.17	32.73	31.23
SAMPSON	6	24.56	23.36	22.21
SCOTLAND	7	47.98	30.00	37.70
STANLY	5	22.12	41.36	36.58
STOKES	2	15.39	28.63	29.50
SURRY	6	21.72	36.52	40.42
SWAIN	2	41.99	14.30	28.89
TRANSYLVANIA	3	30.07	20.08	17.30
TYRRELL	1	49.38	16.48	11.09
UNION	4	13.55	12.60	13.36
VANCE	7	42.39	30.02	24.46
WAKE	26	20.89	24.23	27.51
WARREN	0	0.00	34.43	34.60
WASHINGTON	1	14.54	24.00	27.36
WATAUGA	1	7.86	15.76	49.12
WAYNE	13	29.14	21.74	24.10
WILKES	3	11.28	10.13	12.24
WILSON	9	30.20	31.13	31.66
YADKIN	5	37.21	22.64	27.02
YANCEY	1	14.94	20.00	13.65

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

N.C. DEPARTMENT OF HUMAN RESOURCES, DIVISION OF HEALTH SERVICES
PUBLIC HEALTH STATISTICS BRANCH

FEMALE BREAST CANCER

NORTH CAROLINA 1971 - 1973

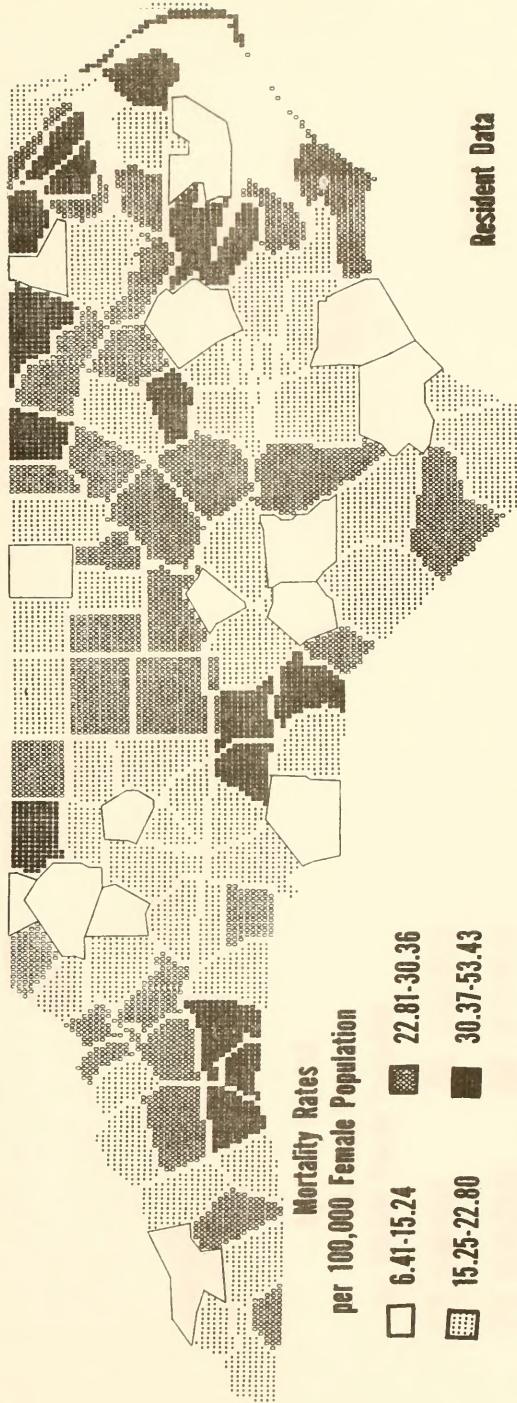


FIGURE 14.A

FEMALE BREAST CANCER

NORTH CAROLINA 1971 - 1973

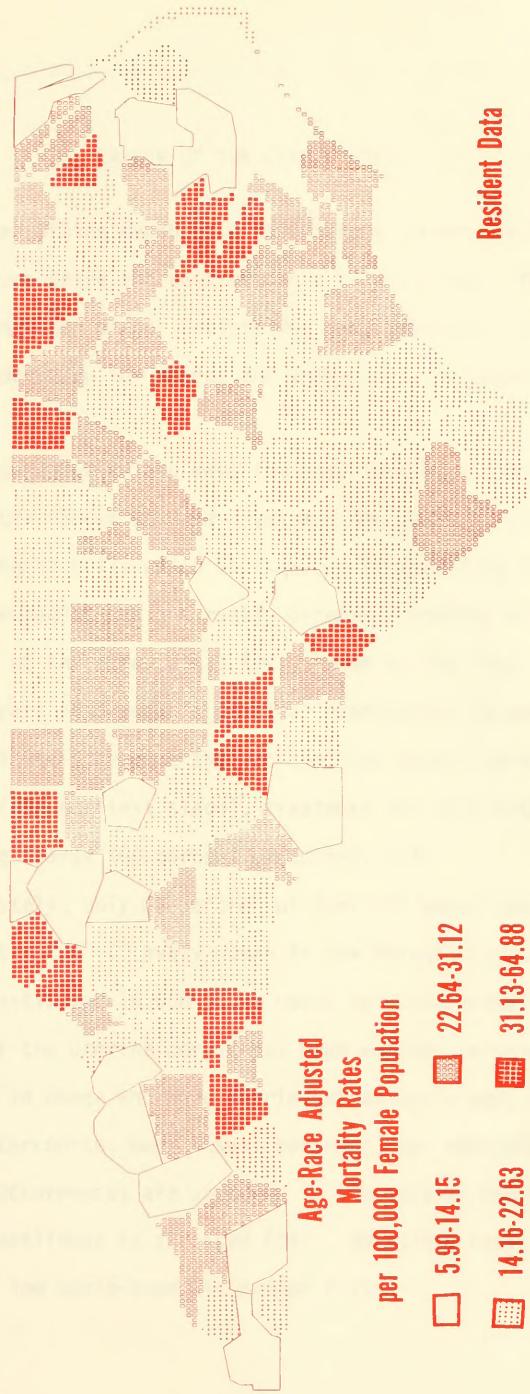


FIGURE 14.B

CANCER OF THE CERVIX UTERI

The United States death rate for uterine cancer has decreased steadily to about one-third the rate recorded 35 years ago. Two factors are cited by the American Cancer Society for this decrease: the unremitting programs of education for women; and improvement in detection and treatment. (32)

Dr. George Papanicolaou made the most important discovery for detection of cervical cancer when he developed the cervical scrape method in 1941. By looking at cells which are shed or scraped from living cervical tissue, a cytotechnologist can accurately determine whether or not cancer is present 95 percent of the time. This test, known as the "Pap test," has become a standard part of a woman's physical examination because of its accuracy and simplicity. Because the Pap test can detect cervical cancer at the *in situ* stage (the earliest stage), treatment for this disease has the potential for being nearly 100 percent effective. (27)

Unfortunately, only 53 percent of American women over age 20 have ever had a Pap test (32). If every woman in the United States had one Pap test per year, an estimated 16,000 lives could be saved annually (26).

Cancer of the uterine cervix has been related to sexual activity, being "more common in women who were married at an early age, who have had frequent sexual intercourse, many sexual partners, and multiple broken marriages" (33). Occurrences are uncommon in communities where men are circumcised and cleanliness is stressed (26). Mortality rates are higher than average among low socio-economic groups (33).

Reflecting the downward trend in national mortality rates for cervical cancer, the number of American women who died from this disease dropped from 8,487 in 1960 to 6,940 in 1969. The mortality rate for white women declined from 8.5 per 100,000 population in 1960 to 6.0 in 1969, the rate for nonwhite women decreased from 15.8 to 11.7. (1,29)

The race differential is even greater in North Carolina than nationally. While rates for both whites and nonwhites are declining, the difference between race-specific rates is increasing. Between 1970 and 1973, the overall mortality rate for cervical cancer had declined from 8.3 to 7.3; the rate for white women had declined even more, from 5.7 to 4.5; but the rate for nonwhite women had declined only slightly, from 16.6 to 16.3. These overall improvements during the three-year period involved women at all ages except those 35-44 and those 85 years or older.

As shown in Figure 15.A, high mortality rates for cancer of the cervix during 1971-73 were found in all areas of the State with a major high-risk area involving five adjacent southcentral counties (Union, Anson, Montgomery, Richmond, and Scotland). There were twenty counties with level-four mortality rates, none of which dropped substantially after adjustment for age and race factors (Figure 15.B). Moreover, nine other counties had level-four adjusted rates corresponding to level-three or lower actual rates. Thus, among the twenty counties with level-four actual mortality, age and race factors were not responsible for the high rates; and among the nine counties which became level-four after adjustment, actual rates would have been higher had it not been for their favorable population composition.

With the understanding that some county rates are based on small numbers of deaths and are thus susceptible to some random fluctuation, the cervical cancer mortality maps may indicate areas where better screening is needed.

TABLE 15

MORTALITY STATISTICS FOR 1973 AND 1971-1973

NORTH CAROLINA RESIDENTS

CANCER OF THE CERVIX UTERI

GEOGRAPHICAL AREA	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
NORTH CAROLINA	194	7.25	7.22	7.22
DHR REGIONS				
EASTERN	55	9.73	8.45	7.42
SOUTH CENTRAL	51	8.74	7.43	7.17
NORTH CENTRAL	37	6.16	6.94	7.01
WESTERN	51	5.49	6.50	7.03
COUNTIES				
ALAMANCE	4	7.68	9.69	10.59
ALEXANDER	0	0.00	3.20	3.04
ALLEGHANY	0	0.00	0.00	0.00
ANSON	3	24.42	18.94	18.19
ASHE	0	0.00	3.34	2.76
AVERY	1	14.88	15.04	10.85
BEAUFORT	3	15.97	14.15	9.65
BERTIE	0	0.00	6.08	2.20
BLADEN	2	14.65	4.87	2.61
BRUNSWICK	1	7.07	7.34	7.00
BUNCOMBE	8	10.36	9.50	11.01
BURKE	0	0.00	3.13	2.46
CABARRUS	1	2.50	4.18	4.81
CALDWELL	2	6.62	7.82	13.89
CAMDEN	0	0.00	0.00	0.00
CARTERET	1	6.01	6.04	7.63
CASWELL	0	0.00	10.34	14.47
CATAWBA	4	8.14	7.53	8.28
CHATTHAM	2	13.26	6.61	6.43
CHEROKEE	0	0.00	11.59	8.71
CHOWAN	0	0.00	11.99	7.56
CLAY	0	0.00	0.00	0.00
CLEVELAND	1	2.60	6.97	6.97
COLUMBUS	3	12.05	12.08	9.31
CRAVEN	1	3.23	5.41	5.08
CUMBERLAND	5	5.25	3.88	5.65
CURRITUCK	0	0.00	8.59	6.25
DARL	1	25.26	25.57	15.74
DAVIDSON	5	9.92	7.33	8.24
DAVIE	0	0.00	0.00	0.00
DUPLIN	3	15.23	6.77	6.38
DURHAM	10	13.98	9.39	7.21
EDGEcombe	2	7.19	12.08	10.52
FORSYTH	10	8.55	10.63	10.38
FRANKLIN	0	0.00	4.66	5.58
GASTON	5	6.36	11.08	11.25
GATES	0	0.00	0.00	0.00
GRAHAM	0	0.00	0.00	0.00
GRANVILLE	0	0.00	0.00	0.00
GREENE	1	13.02	4.31	2.69
GUILFORD	7	4.44	6.40	6.75
HALIFAX	3	10.76	4.77	5.50
HARNETT	2	7.66	7.73	7.84

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

MORTALITY STATISTICS FOR 1973 AND 1971-1973, NORTH CAROLINA RESIDENTS
CANCER OF THE CERVIX UTERI CONT'D.

COUNTIES (CONT'D)	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
HAYWOOD	1	4.51	6.06	4.48
HENDERSON	3	12.98	7.24	10.49
HERTFORD	0	0.00	8.22	9.26
HOKE	0	0.00	3.94	2.02
HYDE	0	0.00	0.00	0.00
IREDELL	1	2.53	9.41	10.55
JACKSON	0	0.00	0.00	0.00
JOHNSTON	2	6.12	6.14	6.09
JONES	1	20.30	13.39	13.21
LEE	3	17.98	16.23	15.78
LENOIR	8	26.65	16.73	16.27
LINCOLN	1	5.60	3.79	6.35
MCDOWELL	2	12.46	4.16	3.28
MACON	0	0.00	7.75	4.94
MADISON	2	24.75	12.25	9.47
MARTIN	2	15.91	7.90	8.03
MECKLENBURG	11	5.75	5.28	5.67
MITCHELL	0	0.00	4.78	3.40
MONTGOMERY	1	10.10	13.41	12.63
MOORE	2	9.28	10.94	9.26
NASH	2	6.31	5.28	4.01
NEW HANOVER	1	2.15	9.45	8.91
NORTHHAMPTON	2	17.09	14.04	15.54
ONSLOW	5	13.22	7.01	12.16
ORANGE	0	0.00	1.11	1.61
PAMLICO	1	20.56	6.84	4.86
PASQUOTANK	1	7.06	2.36	1.36
PENDER	2	21.86	10.90	5.59
PERQUIMANS	0	0.00	7.63	6.98
PERSON	1	7.40	2.47	2.84
PITT	0	0.00	5.95	4.56
POLK	0	0.00	5.23	2.40
RANDOLPH	1	2.46	3.31	2.79
RICHMOND	3	14.19	12.67	12.06
ROBESON	5	11.06	10.38	10.18
ROCKINGHAM	3	7.68	4.29	4.16
ROWAN	0	0.00	2.84	2.51
RUTHERFORD	1	3.91	6.54	5.01
SAMPSON	2	8.18	13.74	9.82
SCOTLAND	3	20.56	13.84	13.86
STANLY	0	0.00	2.95	2.47
STOKES	0	0.00	2.60	2.27
SURRY	4	14.48	7.30	9.86
SWAIN	0	0.00	0.00	0.00
TRANSYLVANIA	0	0.00	3.34	14.14
TYRRELL	0	0.00	0.00	0.00
UNION	2	6.77	11.45	12.01
VANCE	1	6.05	14.01	8.84
WAKE	6	4.82	4.08	4.42
WARREN	1	11.35	7.65	2.16
WASHINGTON	0	0.00	4.80	3.20
WATAUGA	3	23.59	7.88	7.66
WAYNE	8	17.93	8.24	7.34
WILKES	2	7.52	5.06	4.07
WILSON	3	10.06	10.00	8.55
YADKIN	0	0.00	0.00	0.00
YANCEY	0	0.00	0.00	0.00

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

CANCER OF THE CERVIX UTERI

NORTH CAROLINA 1971 - 1973

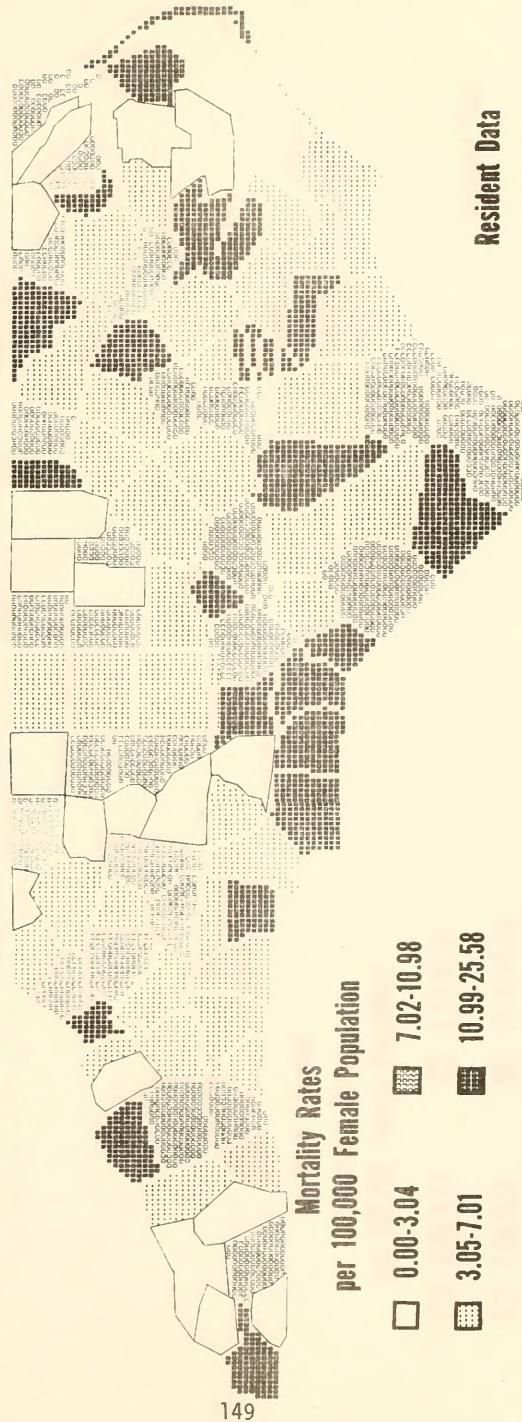


FIGURE 15.A

CANCER OF THE CERVIX UTERI NORTH CAROLINA 1971 - 1973

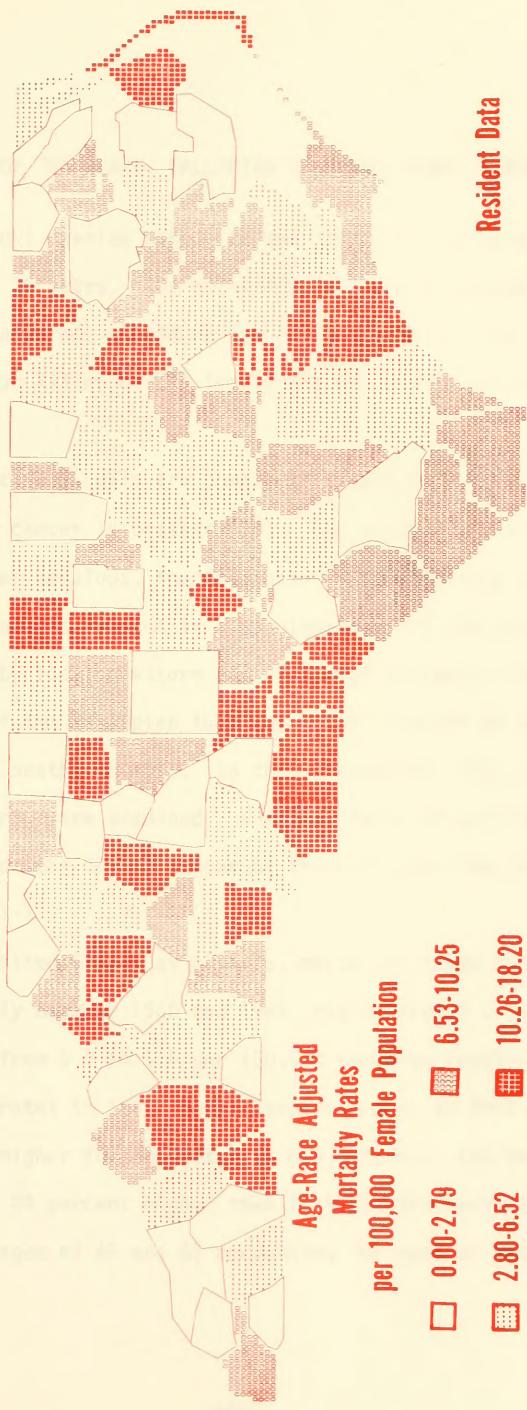


FIGURE 15.B

CANCER OF THE OVARY, FALLOPIAN TUBE AND BROAD LIGAMENT

Facts about ovarian cancer in the United States have changed little in the last 15 years. The mortality rate has increased steadily. There is still no accurate procedure for early detection, and it remains the number one woman killer of all female genitourinary cancers in the country. (30)

Ovarian cancer cells are sometimes detected in Pap test screening but not every time cancer is present (15). Due to the insidious manner in which ovarian cancer develops, the diagnosis is usually late and the prognosis poor. The most frequent symptom is a painless mass in the pelvis or abdomen, often accompanied by local pressure and abdominal fullness. (30)

Cancer of the Fallopian tube and broad ligament accounted for only two North Carolina deaths in 1973. In this discussion, only statistics concerning the ovaries are examined. However, Table 16 and Figures 16.A and 16.B do include 7 deaths due to cancer of the Fallopian tube and broad ligament for the period 1971-73.

In the United States as a whole, mortality rates for ovarian cancer increased moderately between 1960 and 1969, rising from 9.2 to 9.9 per 100,000 white females and from 5.0 to 5.5 per 100,000 nonwhite females (1,29). Compared to these national rates in 1969, North Carolina rates in 1973 were lower for whites at 8.8 and higher for nonwhites at 6.3. At 8.2, the total rate for ovarian cancer was 24 percent higher than in 1972 with North Carolina white women between the ages of 45 and 65 accounting for most of the annual increase.

During 1971-73, high mortality rates for cancer of the ovary were largely confined to eastern and western counties with half of the eighteen level-four rates occurring in the East (Figure 16.A). County mortality rates varied from 0.0 to 24.3 with an average county rate of 7.5. Except for Henderson and Hyde counties, whose level-four actual rates corresponded to level-two adjusted rates (Figure 16.B), adjustment for age and race did not explain differences in the county rates. The reader should bear in mind, however, that most counties did not have large numbers of deaths from ovarian cancer and rates may thus be subject to random fluctuation.

TABLE 16

MORTALITY STATISTICS FOR 1973 AND 1971-1973

NORTH CAROLINA RESIDENTS

CANCER OF THE OVARY

GEOGRAPHICAL AREA	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
NORTH CAROLINA	221	8.25	7.30	7.30
DHR REGIONS				
EASTERN	49	8.67	6.79	6.92
SOUTH CENTRAL	39	6.68	5.30	5.89
NORTH CENTRAL	57	9.50	7.61	7.35
WESTERN	76	8.19	8.67	8.19
COUNTIES				
ALAMANCE	4	7.68	6.46	6.18
ALEXANDER	1	9.50	9.62	8.69
ALLEGHANY	0	0.00	7.68	5.96
ANSON	0	0.00	2.70	2.14
ASHE	0	0.00	6.69	4.75
AVERY	1	14.88	10.03	7.43
BEAUFORT	4	21.29	12.38	10.97
BERTIE	3	27.32	15.20	15.04
BLADEN	1	7.32	7.31	6.93
BRUNSWICK	0	0.00	7.34	7.05
BUNCOMBE	12	15.54	10.37	8.16
BURKE	0	0.00	5.22	4.59
CABARRUS	3	7.51	6.69	5.96
CALDWELL	2	6.62	8.94	8.09
CAMDEN	1	34.36	11.51	11.92
CARTERET	2	12.02	6.04	4.98
CASWELL	0	0.00	3.44	3.95
CATAWBA	0	0.00	2.05	1.94
CHATTHAM	0	0.00	6.61	6.10
CHEROKEE	0	0.00	7.72	6.36
CHOWAN	1	17.94	5.99	7.61
CLAY	1	36.39	24.33	15.14
CLEVELAND	2	5.21	13.94	13.20
COLUMBUS	1	4.01	4.02	3.78
CRAVEN	1	3.23	4.32	4.30
CUMBERLAND	4	4.20	3.88	6.36
CURRITUCK	0	0.00	0.00	0.00
DARE	0	0.00	0.00	0.00
DAVIDSON	8	15.87	10.66	12.74
DAVIE	1	10.07	10.10	10.36
DUPLIN	2	10.15	8.46	7.53
DURHAM	6	8.38	7.98	7.88
EDGECOMBE	1	3.59	4.83	4.31
FORSYTH	14	11.97	10.05	10.38
FRANKLIN	0	0.00	4.66	3.34
GASTON	5	6.36	8.10	8.81
GATES	0	0.00	7.88	10.15
GRAHAM	0	0.00	0.00	0.00
GRANVILLE	1	6.03	1.99	2.59
GREENE	0	0.00	0.00	0.00
GUILFORD	12	7.62	6.83	6.95
HALIFAX	3	10.76	3.57	3.09
HARNETT	1	3.83	3.86	3.89

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

MORTALITY STATISTICS FOR 1973 AND 1971-1973, NORTH CAROLINA RESIDENTS
CANCER OF THE OVARY CONT'D.

COUNTIES (CONT'D)	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
HAYWOOD	3	13.55	15.16	10.74
HENDERSON	3	12.98	11.59	6.58
HERTFORD	0	0.00	2.74	1.15
HOKE	0	0.00	3.94	1.94
HYDE	1	36.39	11.90	5.00
IREDELL	2	5.06	6.84	6.13
JACKSON	1	8.89	5.94	5.86
JOHNSTON	1	3.06	5.11	4.76
JONES	1	20.30	6.69	7.72
LEE	3	17.98	10.14	10.24
LENOIR	3	9.99	5.57	4.42
LINCOLN	1	5.60	1.89	1.61
MCDOWELL	1	6.23	6.24	4.89
MACON	3	34.30	15.50	8.85
MADISON	1	12.37	8.17	5.11
MARTIN	1	7.95	10.53	9.37
MECKLENBURG	23	12.03	10.40	11.39
MITCHELL	0	0.00	9.57	6.87
MONTGOMERY	0	0.00	3.35	2.62
MOORE	2	9.28	3.12	2.73
NASH	4	12.62	9.50	8.76
NEW HANOVER	6	12.92	11.63	11.14
NORTHAMPTON	1	8.54	14.04	10.53
ONSLOW	1	2.64	2.63	4.64
ORANGE	0	0.00	3.33	4.83
PAMLICO	1	20.56	6.84	5.81
PASQUOTANK	3	21.20	16.52	17.49
PENDER	1	10.93	14.53	16.52
PERQUIMANS	1	23.06	7.63	8.37
PERSON	2	14.81	9.89	9.74
PITT	1	2.55	3.40	4.46
POLK	0	0.00	10.46	7.64
RANDOLPH	3	7.40	6.63	5.55
RICHMOND	1	4.73	4.75	5.17
ROBESON	5	11.06	6.67	7.57
ROCKINGHAM	5	12.81	5.15	4.61
ROWAN	3	6.42	9.25	7.95
RUTHERFORD	1	3.91	11.78	10.54
SAMPSON	4	16.37	12.36	10.57
SCOTLAND	1	6.85	2.30	3.38
STANLY	1	4.42	8.86	7.35
STOKES	1	7.69	7.80	6.77
SURRY	4	14.48	12.17	9.11
SWAIN	2	41.99	21.45	24.94
TRANSYLVANIA	1	10.02	6.69	5.76
TYRRELL	0	0.00	16.48	11.86
UNION	0	0.00	2.29	2.24
VANCE	2	12.11	6.00	6.59
WAKE	10	8.03	4.08	4.75
WARREN	0	0.00	7.65	8.59
WASHINGTON	0	0.00	0.00	0.00
WATAUGA	0	0.00	0.00	0.00
WAYNE	3	6.72	6.74	8.15
WILKES	1	3.76	8.86	7.30
WILSON	2	6.71	3.33	3.34
YADKIN	0	0.00	0.00	0.00
YANCEY	2	29.88	10.00	6.60

* SEE SECTION I

** AGE-RACE-SEX ADJUSTED (SEE SECTION I)

CANCER OF THE OVARY

NORTH CAROLINA 1971 - 1973

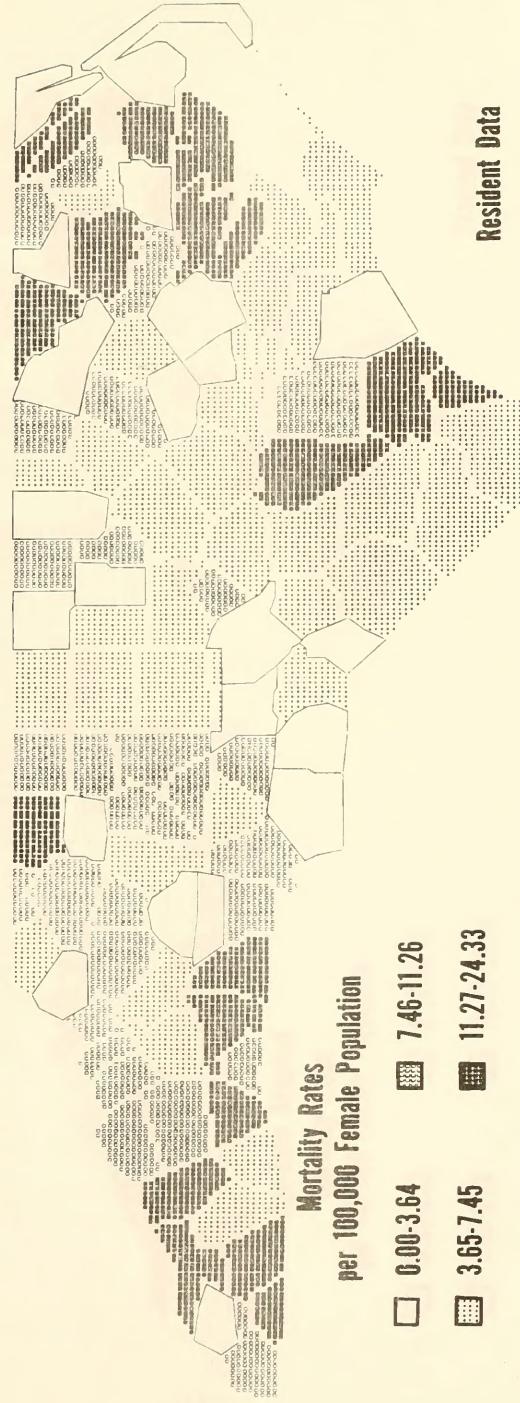


FIGURE 16.A

CANCER OF THE OVARY

NORTH CAROLINA 1971 - 1973

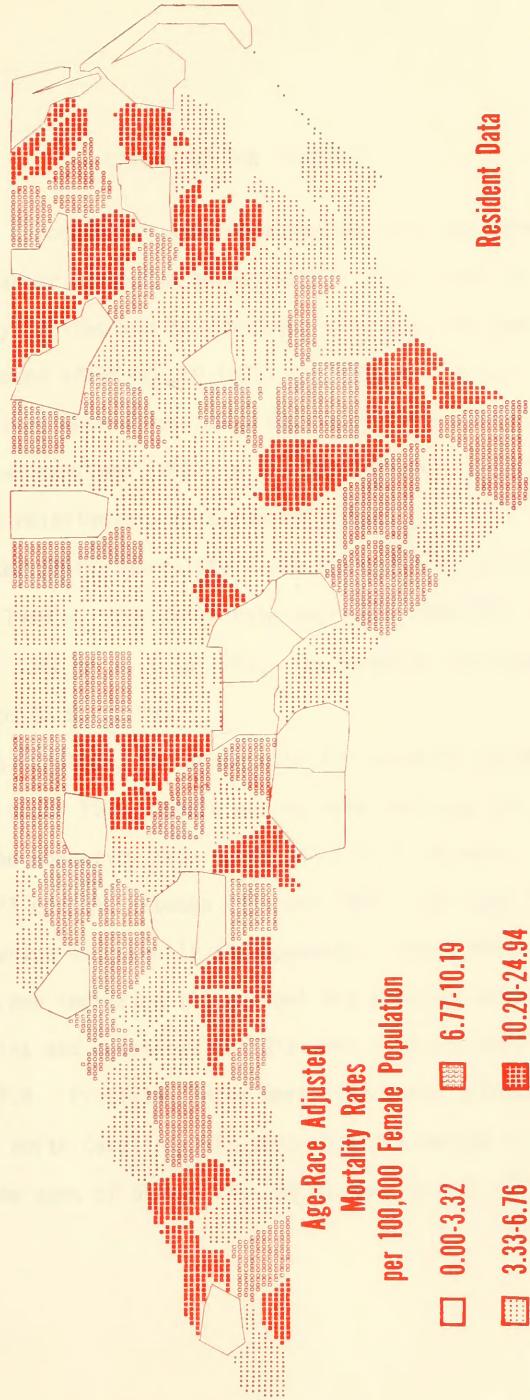


FIGURE 16.B

CANCER OF THE PROSTATE

Prostate cancer kills more American men than any other cancer site except lung cancer, claiming an estimated 17,800 lives in 1973 (32). The disease usually strikes men 50 years old or older, and the incidence increases every decade after age 50 (30). Incidence is higher among nonwhites than whites, married men than men who never married, but higher among divorced or widowed men (26). While the cause of prostate cancer is unknown, a hormone relationship is suspected (30).

The United States mortality rates for prostate cancer changed little during the 1960's. The white rate increased from 16.1 per 100,000 male population in 1960 to 16.6 in 1969. The nonwhite increased more, rising from 18.2 to 20.6. (1,29)

In North Carolina, the death rate for prostate cancer has increased nearly 50 percent since 1960. There was no rate increase for whites from 1960 to 1968 as the mortality rate remained at 11.7; however, the rate for whites increased 27 percent between 1968 and 1973. The rate for nonwhites followed a trend which was exactly the opposite: from 1960 to 1968, the rate for nonwhite men increased 111 percent but remained unchanged in 1973. The rates for whites and nonwhites in 1973 were 14.9 and 28.1 yielding an overall rate of 17.8. Prostate cancer mortality rates increase dramatically after age 50. In North Carolina, the 1973 rate for men 45 to 54 was 4.8; for men between the ages of 65 and 74, 126.0; and for men over age 85, 468.5.

During 1971-73, county mortality rates for prostate cancer ranged from 0.0 to 78.1 per 100,000 male population (Figure 17.A). Significantly high (level-four) rates largely involved northeastern counties with clusters of level-three rates occurring in both the South Central and Western regions. Adjustment for age and race (Figure 17.B) served to reduce the average county rate from 21.1 to 17.0; however, most counties with level-four actual rates also had level-four adjusted rates indicating that factors other than age and race were unfavorable. Adjustment resulted in a substantial increase in the rate for Alexander County; but since this county's rate was based on only six deaths for the three-year period, allowance should be made for random fluctuation in the rate. Some other counties also had similar situations with respect to cancer of the prostate.

TABLE 17

MORTALITY STATISTICS FOR 1973 AND 1971-1973

NORTH CAROLINA RESIDENTS

CANCER OF THE PROSTATE

GEOGRAPHICAL AREA	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
NORTH CAROLINA	455	17.82	16.78	16.78
DHR REGIONS				
EASTERN	103	18.48	16.81	15.74
SOUTH CENTRAL	90	15.46	15.65	17.06
NORTH CENTRAL	88	15.98	16.91	16.45
WESTERN	174	20.16	17.42	17.32
COUNTIES				
ALAMANCE	5	10.37	16.02	17.14
ALEXANDER	2	19.68	19.93	35.17
ALLEGHANY	1	24.88	25.03	12.50
ANSON	2	17.87	23.71	16.68
ASHE	3	31.66	27.81	11.96
AVERY	1	14.83	9.99	6.31
BEAUFORT	5	29.35	17.50	12.43
BERTIE	5	50.54	26.85	24.61
BLADEN	3	23.02	22.96	13.73
BRUNSWICK	2	14.46	7.47	4.42
BUNCOMBE	21	30.18	23.45	18.13
BURKE	1	3.31	6.64	5.58
CABARRUS	7	19.10	19.13	20.51
CALDWELL	5	17.49	12.95	12.20
CAMDEN	1	37.60	25.06	14.82
CARTERET	2	12.35	10.35	11.85
CASWELL	4	42.60	35.29	21.35
CATAWBA	1	2.17	11.72	14.78
CHATTHAM	5	34.28	49.99	38.01
CHEROKEE	1	12.38	8.27	3.55
CHOWAN	3	56.63	44.08	22.89
CLAY	1	39.26	13.02	6.48
CLEVELAND	9	24.91	16.64	17.06
COLUMBUS	8	34.34	22.88	21.10
CRAVEN	6	17.88	9.98	14.40
CUMBERLAND	3	2.48	3.62	9.02
CURRITUCK	2	50.56	17.46	13.13
DARE	2	53.89	36.26	57.26
DAVIDSON	9	18.55	19.35	19.54
DAVIE	5	53.29	21.33	17.18
DUPLIN	4	21.83	25.38	22.94
DURHAM	13	20.30	19.37	18.12
EDGEcombe	2	7.93	18.60	13.34
FORSYTH	13	12.44	11.55	12.48
FRANKLIN	3	22.55	12.53	9.53
GASTON	13	17.83	11.00	12.14
GATES	1	23.89	15.84	10.78
GRAHAM	0	0.00	10.66	6.18
GRANVILLE	2	12.41	20.53	20.30
GREENE	2	27.53	18.15	17.33
GUILFORD	20	14.28	15.32	16.44
HALIFAX	5	19.48	14.20	10.97
HARNETT	3	11.85	15.93	16.97

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

MORTALITY STATISTICS FOR 1973 AND 1971-1973, NORTH CAROLINA RESIDENTS
CANCER OF THE PROSTATE CONT'D.

COUNTIES (CONT'D)	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
HAYWOOD	1	4.80	17.71	23.61
HENDERSON	7	33.16	26.90	13.46
HERTFORD	4	36.15	38.99	28.43
HOKE	D	0.00	3.89	6.38
HYDE	1	38.86	75.81	32.46
IREDELL	7	19.18	14.79	14.74
JACKSON	D	0.00	18.11	12.72
JOHNSTON	3	9.94	13.26	12.77
JONES	2	42.69	28.02	23.02
LEE	2	13.01	30.71	31.34
LENOIR	3	11.14	13.64	14.66
LINCOLN	1	5.88	3.97	3.04
MCDOWELL	7	46.74	28.91	25.95
MACON	2	24.14	20.38	17.92
MADISON	4	52.27	30.09	10.55
MARTIN	1	8.64	11.40	7.38
MECKLENBURG	25	14.36	14.71	18.75
MITCHELL	2	30.84	30.46	13.99
MONTGOMERY	2	21.59	32.10	24.20
MOORE	2	10.21	17.16	13.90
NASH	6	20.74	18.46	15.15
NEW HANOVER	6	14.07	15.06	15.18
NORTHAMPTON	2	17.40	20.00	12.04
ONSLOW	2	3.26	3.78	15.76
ORANGE	2	6.11	9.37	11.73
PAMLICO	2	44.54	14.76	10.60
PASQUOTANK	3	22.69	32.82	26.18
PENDER	3	33.62	33.51	24.25
PERQUIMANS	5	123.30	73.20	39.00
PERSON	1	7.83	18.25	16.16
PITT	4	11.18	10.25	10.20
POLK	3	53.93	29.88	23.22
RANDOLPH	4	10.31	7.78	6.50
RICHMOND	6	30.92	22.37	19.70
ROBESON	13	30.98	23.12	22.16
ROCKINGHAM	4	11.22	18.76	16.51
ROWAN	13	29.85	22.84	18.97
RUTHERFORD	11	46.71	32.58	27.13
SAMPSON	9	39.71	28.01	23.37
SCOTLAND	5	37.50	22.72	19.68
STANLY	4	18.87	20.43	22.26
STOKES	4	31.85	32.23	28.74
SURRY	7	27.28	19.62	16.68
SWAIN	D	0.00	21.58	14.48
TRANSYLVANIA	4	40.58	23.69	17.54
TYRRELL	D	0.00	0.00	0.00
UNION	6	20.88	16.46	17.25
VANCE	D	0.00	17.60	10.70
WAKE	17	14.15	12.68	14.91
WARREN	5	61.29	78.09	27.67
WASHINGTON	1	14.76	14.61	17.35
WATAUGA	4	33.77	25.42	17.05
WAYNE	3	6.91	16.15	17.27
WILKES	6	23.40	18.34	17.55
WILSON	5	18.21	18.07	12.87
YADKIN	2	15.87	16.04	10.03
YANCEY	1	15.47	20.67	9.49

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

CANCER OF THE PROSTATE

NORTH CAROLINA 1971-1973

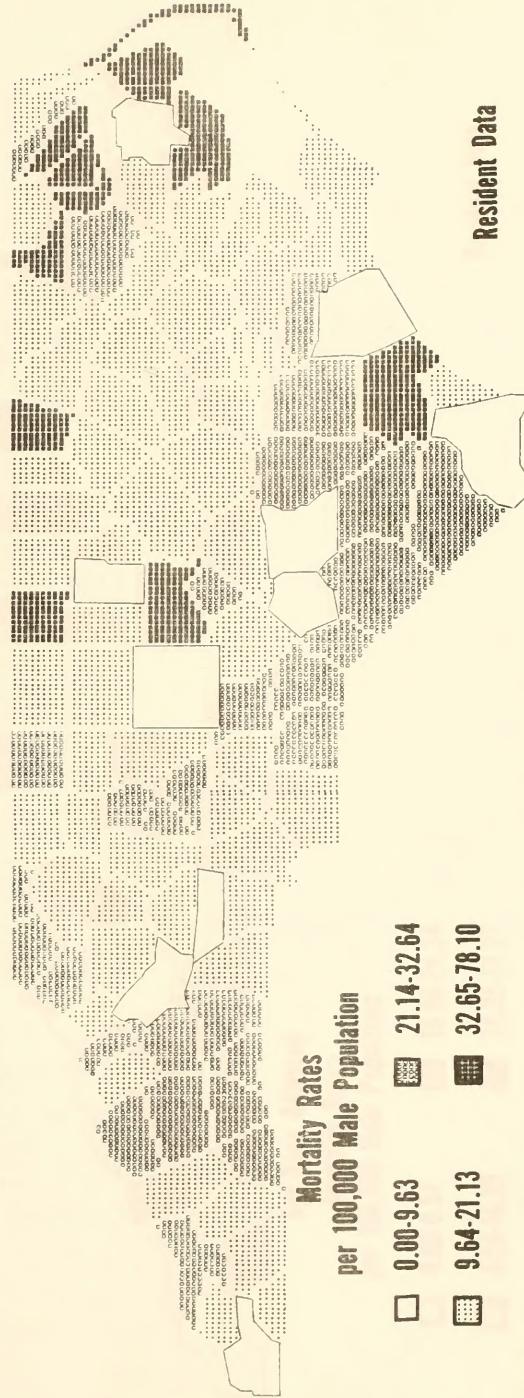


FIGURE 17.A

CANCER OF THE PROSTATE

NORTH CAROLINA 1971 - 1973

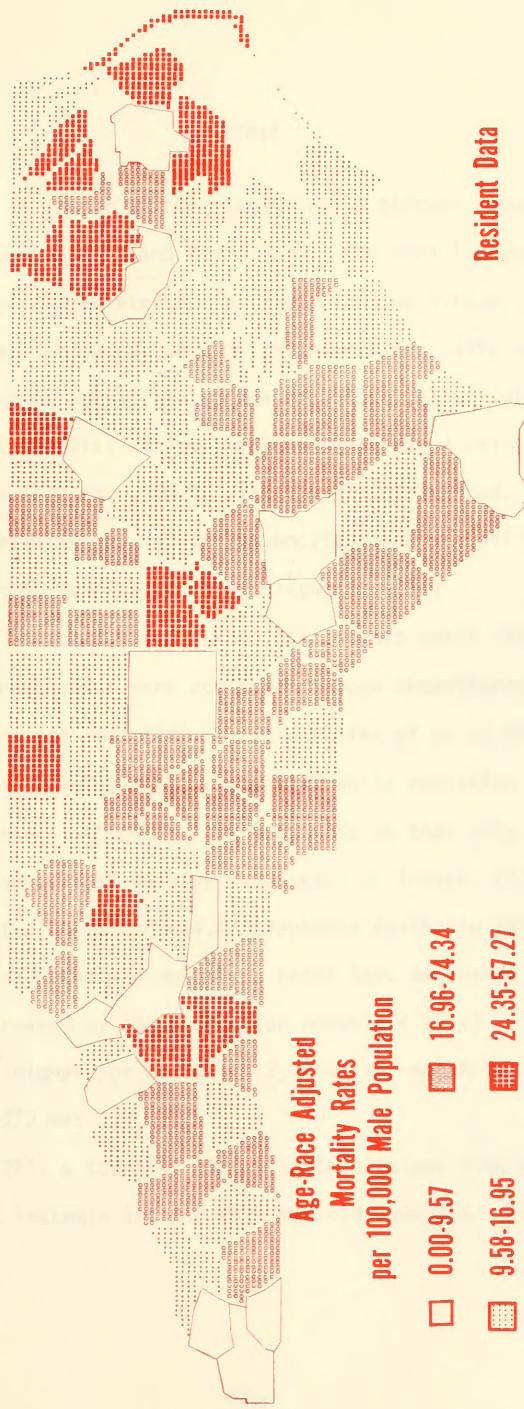


FIGURE 17.B

LEUKEMIA

Leukemia is cancer of the blood-forming tissues, usually the bone marrow, the lymph nodes, and the spleen. The word leukemia means "white blood." When cancer strikes the blood-forming tissue, too many white blood cells are produced, many of these only partially developed. The result is a lack of production of healthy blood cells. Without red blood cells, anemia results; without healthy white blood cells to fight infection, sickness results; without platelets to clot blood, hemorrhaging results; without chemotherapy, acute lymphocytic leukemia will kill in an average of four months from the date of diagnosis. (34)

Leukemia was considered a hopeless disease until 1947 when the first successful remissions were achieved through chemotherapy. Today, some medical centers are reporting remission rates of up to 90 percent for Acute Lymphoblastic Leukemia (ALL). However, while remission rates improve with each new treatment discovery, the fact remains that only 25 percent of acute leukemia patients will survive five years or longer. (23)

Nationally, there were 14,478 leukemia deaths in 1973. From 1960 to 1973, the national leukemia mortality rates have decreased by 4 percent for whites and increased by 18 percent for nonwhites (1,2). The 1973 rates, however, are still higher for whites, 7.2, than for nonwhites, 4.6. The overall rate for 1973 was 6.9. (2)

During 1973, a total of 352 North Carolinians died of leukemia, 110 from lymphatic leukemia and 148 from myeloid leukemia. The type of cell

was not specified in an additional 86 leukemia deaths. The remaining eight deaths were due to monocytic leukemia which involved only people over age 45.

The 1973 North Carolina leukemia death rate of 6.7 per 100,000 population compares to a 1960 rate of approximately 6.4. The 1973 rates were 7.3 for white males, 6.5 for white females, 7.9 for nonwhite males, and 4.5 for nonwhite females. For the population under age 25, the rate was 2.1; for the population over age 25, 10.8; for the population over age 55, 24.6. Thus, although leukemia has long been considered a children's disease, it is more likely to kill adults. Even ALL, which is reportedly predominant among children (15), claimed an equal share of North Carolina adults. Among 38 North Carolinians who died of this type of leukemia in 1973, twenty were more than 20 years old and ten were over age 65. Excluding accidents, however, cancer is the number one killer of children between the ages of 3 and 14, and leukemia is responsible for about half of all cancer deaths in this age group. Moreover, it is almost always the acute forms of leukemia which strike children. (15)

Leukemia is not included in the Cancer Diagnosis and Treatment Program of the Division of Health Services because it is treated by chemotherapy, the treatment lasts for long periods of time, and the survival rates are low.

Figure 18.A shows that a preponderance of the high leukemia mortality rates during 1971-73 occurred in the Western and Eastern regions. Overall, rates for the period were as low as 0.0 and as high as 21.3, with the average county rate at 6.6 per 100,000 population. Generally, adjustment for age, race and sex (Figure 18.B) resulted in somewhat lower rates for most counties. Alleghany County had the largest drop, from a level-four actual rate to a level-two adjusted rate.

TABLE 18

MORTALITY STATISTICS FOR 1973 AND 1971-1973

NORTH CAROLINA RESIDENTS

LEUKEMIA

GEOGRAPHICAL AREA	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
NORTH CAROLINA	352	6.73	6.35	6.35
DHR REGIONS				
EASTERN	59	5.25	5.76	6.12
SOUTH CENTRAL	66	5.66	5.82	6.50
NORTH CENTRAL	101	8.78	7.17	7.04
WESTERN	126	7.03	6.55	6.11
COUNTIES				
ALAMANCE	9	8.97	6.37	6.14
ALEXANDER	2	9.66	6.52	5.65
ALLEGHANY	1	11.90	12.00	5.73
ANSON	0	0.00	9.90	8.86
ASHE	0	0.00	6.82	3.62
AVERY	1	7.43	10.01	6.56
BEAUFORT	3	8.37	7.41	6.62
BERTIE	2	9.58	6.38	5.43
BLADEN	2	7.49	6.23	7.35
BRUNSWICK	0	0.00	6.17	6.99
BUNCOMBE	21	14.30	9.99	8.39
BURKE	2	3.21	8.06	6.75
CABARRUS	4	5.22	6.54	6.25
CALDWELL	4	6.80	7.45	6.38
CAMDEN	0	0.00	6.00	5.19
CARTERET	1	3.04	7.14	11.25
CASWELL	2	10.51	10.46	10.16
CATAWBA	7	7.36	4.24	5.76
CHATHAM	4	13.48	7.83	6.64
CHEROKEE	0	0.00	5.99	3.69
CHOWAN	0	0.00	0.00	0.00
CLAY	2	37.77	12.58	6.54
CLEVELAND	6	8.05	5.38	5.26
COLUMBUS	4	8.30	5.54	6.14
CRAVEN	0	0.00	1.03	1.39
CUMBERLAND	5	2.31	3.42	5.57
CURRITUCK	0	0.00	0.00	0.00
DARE	0	0.00	4.39	2.51
DAVIDSON	9	9.10	7.12	6.68
DAVIE	3	15.53	10.38	9.04
DUPLIN	3	7.89	10.50	10.97
DURHAM	9	6.63	7.18	7.41
EDGECOMBE	4	7.54	7.59	8.14
FORSYTH	26	11.74	8.64	8.80
FRANKLIN	3	10.83	12.08	11.76
GASTON	5	3.30	4.19	4.01
GATES	0	0.00	3.95	3.96
GRAHAM	0	0.00	5.31	3.86
GRANVILLE	2	6.11	7.08	6.09
GREENE	0	0.00	4.42	5.14
GUILFORD	17	5.71	6.54	6.66
HALIFAX	8	14.94	9.30	8.77
HARNETT	3	5.83	5.88	6.07

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

MORTALITY STATISTICS FOR 1973 AND 1971-1973, NORTH CAROLINA RESIDENTS
LEUKEMIA CONT'D.

COUNTIES (CONT'D)	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
HAYWOOD	3	6.98	7.81	5.09
HENDERSON	1	2.26	7.56	4.92
HERTFORD	0	0.00	7.16	5.93
HOKE	1	5.84	3.92	2.05
HYDE	0	0.00	0.00	0.00
IREDELL	7	9.21	4.44	4.60
JACKSON	1	4.49	5.99	6.32
JOHNSTON	3	4.77	6.37	6.01
JONES	1	10.40	10.27	12.69
LEE	2	6.24	7.38	7.65
LENOIR	4	7.02	5.87	6.72
LINCOLN	5	14.35	10.67	8.92
MCDOWELL	2	6.44	8.60	6.24
MACON	2	11.74	9.93	6.55
MADISON	2	12.71	8.37	5.15
MARTIN	1	4.14	4.10	2.75
MECKLENBURG	26	7.11	5.81	6.45
MITCHELL	1	7.47	7.39	4.84
MONTGOMERY	1	5.22	3.45	3.25
MOORE	0	0.00	4.90	4.13
NASH	5	8.25	7.17	7.29
NEW HANOVER	4	4.49	9.48	9.36
NORTHAMPTON	2	8.62	4.24	3.86
ONSLOW	1	1.00	1.33	3.95
ORANGE	4	6.30	6.45	6.81
PAMLICO	1	10.69	21.31	21.42
PASQUOTANK	1	3.65	7.32	7.52
PENDER	0	0.00	3.67	1.53
PERQUIMANS	1	11.91	7.87	8.59
PERSON	1	3.80	2.53	2.27
PITT	2	2.66	3.55	4.80
POLK	0	0.00	2.79	1.37
RANDOLPH	9	11.35	7.61	7.46
RICHMOND	3	7.40	10.72	10.38
ROBESON	8	9.18	7.30	7.05
ROCKINGHAM	5	6.69	6.27	5.67
ROWAN	7	7.75	8.09	6.66
RUTHERFORD	6	12.22	6.80	6.76
SAMPSON	3	6.37	4.97	5.00
SCOTLAND	1	3.58	2.41	3.03
STANLY	2	4.56	6.09	5.79
STOKES	3	11.74	7.93	8.28
SURRY	5	9.38	3.78	3.96
SWAIN	1	10.53	10.76	6.73
TRANSYLVANIA	0	0.00	0.00	0.00
TYRRELL	0	0.00	0.00	0.00
UNION	4	6.86	6.96	7.29
VANCE	3	9.52	8.38	6.76
WAKE	17	6.95	5.67	6.55
WARREN	3	17.68	7.92	5.88
WASHINGTON	3	21.97	14.50	15.19
WATAUGA	1	4.07	13.61	12.05
WAYNE	7	7.95	5.31	5.88
WILKES	0	0.00	3.22	2.56
WILSON	1	1.74	3.46	3.44
YADKIN	1	3.84	5.18	8.11
YANCEY	0	0.00	0.00	0.00

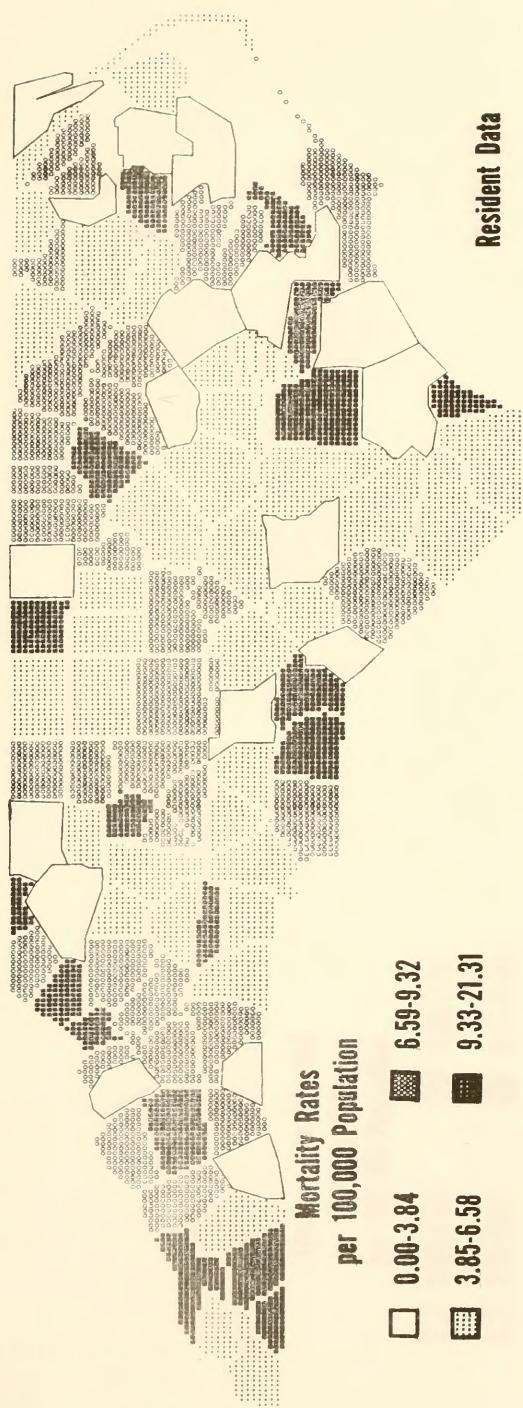
*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

N.C. DEPARTMENT OF HUMAN RESOURCES, DIVISION OF HEALTH SERVICES
PUBLIC HEALTH STATISTICS BRANCH

LEUKEMIA

NORTH CAROLINA 1971 - 1973



Resident Data

FIGURE 18.A

LEUKEMIA

NORTH CAROLINA 1971 - 1973

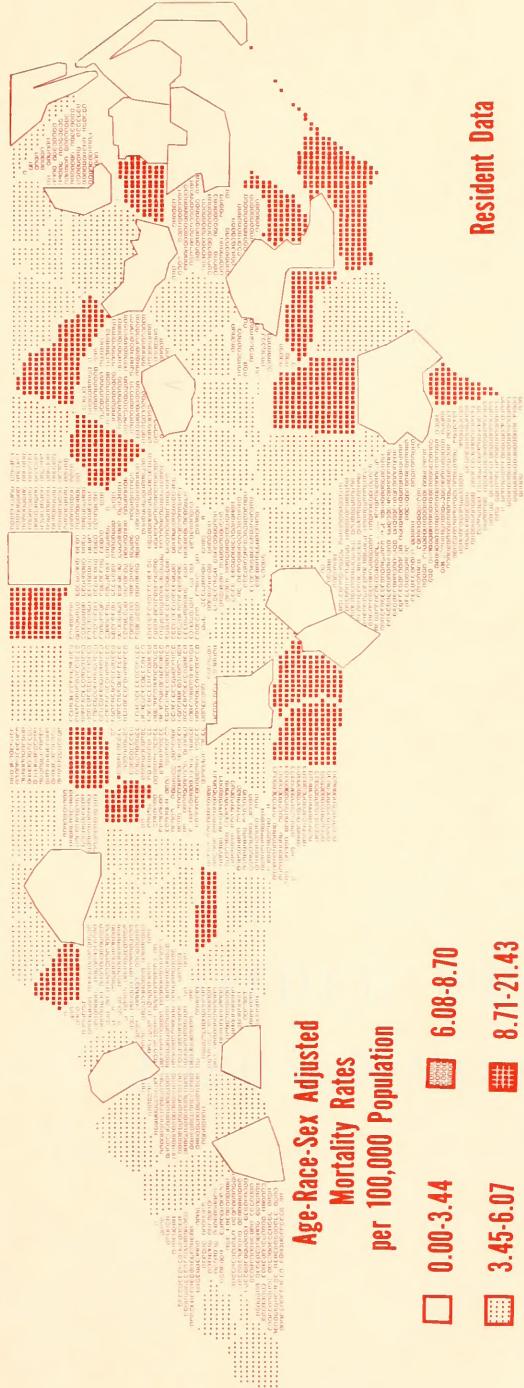


FIGURE 18.B

VI. OTHER SELECTED DISEASE MORTALITY

DIABETES MELLITUS

During 1973, a total of 878 North Carolina deaths were attributed to diabetes mellitus. This represents a death rate of 16.8 per 100,000 population, 22 percent higher than the 1960 rate of 13.8. The United States rate in 1973 was 18.2 (2).

Unlike most leading causes of mortality, the diabetes death rate is higher for women than for men, especially among nonwhites, and the sex gap appears to be widening in North Carolina. The 1973 diabetes rates for race-sex groups in the State were: white males, 13.7; white females, 14.8; non-white males, 20.4; nonwhite females, 30.2. Age-specific death rates for the State show that increases since 1960 have occurred chiefly among persons 65 years of age and over with virtual elimination of diabetes deaths among persons under age 25.

Not only is diabetes a leading cause of death throughout the Nation, but it is a major secondary condition in deaths attributed to other causes, particularly heart disease. In a study of North Carolina deaths during 1968, Blumhagen (35) reveals the following findings with respect to multiple conditions recorded on death certificates:

- Known diabetic decedents had an average of 1.66 conditions other than diabetes at the time of death;
- Diabetes was considered a secondary condition twice as often as it was considered the underlying cause of death;
- Of all known diabetic decedents, at least 84 percent also had some form of cardiovascular disease;
- Of all known diabetic decedents, cardiovascular disease was the underlying cause of death for at least 53 percent.

Although there is presently no cure for diabetes, early diagnosis and treatment may prevent death and disability. Thus, screening clinics throughout the State offer diabetes screening, and in fiscal year 1974, a total of 65,325 persons were tested. Of this number, an estimated 500 (0.8%) were diagnosed and treated for diabetes. The Chronic Disease Branch of the Division of Health Services estimates that about 100,000 North Carolinians presently have diabetes and about one-half are unaware of their condition.

As shown in Figure 19.A, highest death rates for diabetes during 1971-73 were observed for residents of southcentral and northeastern counties and a pocket of westernmost counties, excluding Clay. A pocket of low-rate counties included Craven, Jones, Onslow and Pamlico in the East.

A comparison of Figures 19.A and 19.B reveals that adjustment for age, race and sex resulted in only moderate changes in death rates, meaning that residents of counties with high mortality should be particularly aware of other factors associated with diabetes including familial tendencies and dietary patterns. In evaluating a county's diabetes mortality, persons should also be sensitive to small numbers and random fluctuation which, as in the case of Yancey County, serve to render rate comparisons invalid.

TABLE 19

MORTALITY STATISTICS FOR 1973 AND 1971-1973

NORTH CAROLINA RESIDENTS

DIABETES MELLITUS

GEOGRAPHICAL AREA	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
NORTH CAROLINA	878	16.79	17.00	17.00
DHR REGIONS				
EASTERN	184	16.39	18.11	17.04
SOUTH CENTRAL	195	16.73	16.01	16.76
NORTH CENTRAL	195	16.95	16.12	15.97
WESTERN	304	16.97	17.52	18.30
COUNTIES				
ALAMANCE	18	17.95	16.76	17.69
ALEXANDER	3	14.50	16.31	22.15
ALLEGHANY	0	0.00	4.00	3.18
ANSON	9	38.34	18.39	14.08
ASHE	13	67.26	39.22	39.74
AVERY	0	0.00	10.01	7.09
BEAUFORT	9	25.13	20.38	14.78
BERTIE	4	19.16	23.93	16.25
BLADEN	8	29.98	33.67	25.76
BRUNSWICK	1	3.57	11.11	10.74
BUNCOMBE	32	21.80	22.93	21.31
BURKE	8	12.86	13.97	16.65
CABARRUS	13	16.97	15.27	16.54
CALDWELL	13	22.12	18.92	24.45
CAMDEN	2	35.91	72.00	57.09
CARTERET	3	9.14	13.27	13.41
CASWELL	2	10.51	8.72	8.03
CATAWBA	12	12.63	14.16	21.20
CHATHAM	4	13.48	12.31	10.79
CHEROKEE	6	35.81	41.96	69.73
CHOWAN	5	45.99	33.78	29.39
CLAY	2	37.77	12.58	5.92
CLEVELAND	7	9.39	15.25	16.10
COLUMBUS	7	14.52	22.16	21.19
CRAVEN	7	10.85	10.90	12.83
CUMBERLAND	14	6.49	5.92	9.71
CURRITUCK	3	37.55	38.98	31.43
DARE	3	39.11	21.96	15.51
DAVIDSON	9	9.10	8.82	9.26
DAVIE	6	31.07	38.06	40.54
DUPLIN	6	15.78	21.01	17.89
DURHAM	29	21.39	16.34	14.83
EDGECOMBE	12	22.64	20.25	18.86
FORSYTH	37	16.71	16.67	16.28
FRANKLIN	6	21.67	13.28	10.19
GASTON	22	14.52	13.69	14.95
GATES	1	11.91	27.66	15.55
GRAHAM	1	16.35	21.25	52.48
GRANVILLE	11	33.64	24.29	21.83
GREENE	1	6.69	15.47	15.50
GUILFORD	40	13.44	12.86	13.57
HALIFAX	20	37.35	22.32	16.30
HARNETT	12	23.35	25.50	25.90

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

MORTALITY STATISTICS FOR 1973 AND 1971-1973, NORTH CAROLINA RESIDENTS
DIABETES MELLITUS CONT'D.

COUNTIES (CONT'D)	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	AJUSTED DEATH RATE** 1971-73
HAYWOOD	6	13.97	18.74	12.20
HENRICKSON	13	29.41	18.15	21.49
HERTFORD	1	4.30	12.89	6.04
HOKE	6	35.09	25.49	25.19
HYDE	1	18.79	24.51	14.52
IREDELL	25	32.91	28.00	26.54
JACKSON	5	22.45	29.95	33.27
JOHNSTON	4	6.36	19.13	18.31
JONES	0	0.00	3.42	3.95
LEE	6	18.72	18.97	18.69
LENOIR	7	12.29	19.38	18.05
LINCOLN	5	14.35	10.67	15.92
MCDOWELL	7	22.56	25.80	28.81
MACON	1	5.87	23.84	12.94
MADISON	1	6.35	16.75	10.25
MARTIN	2	8.28	17.79	16.83
MECKLENBURG	45	12.32	12.82	14.92
MICHELL	1	7.47	17.25	9.36
MONTGOMERY	7	36.54	29.38	23.96
MOORE	12	29.18	22.09	18.09
NASH	11	18.15	17.65	15.40
NEW HANOVER	22	24.70	22.00	20.94
NORTHHAMPTON	3	12.93	25.49	20.96
ONSLOW	0	0.00	3.34	8.97
ORANGE	3	4.72	6.45	7.85
PAMLICO	1	10.69	10.65	6.99
PASQUOTANK	8	29.23	24.40	19.60
PENDER	1	5.53	18.39	13.55
PERQUIMANS	1	11.91	23.62	12.06
PERSON	3	11.41	15.23	13.74
PITT	9	12.00	13.79	14.50
POLK	3	25.12	19.53	22.32
RANOLPH	14	17.65	15.65	16.60
RICHMOND	6	14.80	24.74	22.02
ROBESON	29	33.27	29.21	25.08
ROCKINGHAM	19	25.44	23.32	22.05
ROWAN	13	14.40	25.01	23.31
RUTHERFORD	6	12.22	12.24	10.58
SAMPSON	12	25.48	21.33	16.29
SCOTLAND	7	25.07	27.73	29.83
STANLY	12	27.40	22.84	23.68
STOKES	5	19.56	14.54	15.89
SURRY	9	16.89	18.28	13.46
SWAIN	2	21.06	32.28	34.16
TRANSYLVANIA	5	25.21	16.82	19.06
TYRRELL	0	0.00	34.23	22.63
UNION	12	20.60	21.47	23.03
VANCE	3	9.52	12.57	9.78
WAKE	27	11.04	10.94	12.47
WARREN	6	35.36	33.68	23.13
WASHINGTON	4	29.30	19.34	18.94
WATAUGA	3	12.21	12.25	10.57
WAYNE	15	17.04	16.71	18.88
WILKES	6	11.48	10.30	10.55
WILSON	14	24.45	28.91	28.28
YADKIN	7	26.88	27.22	39.15
YANCEY	1	7.60	10.16	48.66

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

N.C. DEPARTMENT OF HUMAN RESOURCES, DIVISION OF HEALTH SERVICES
PUBLIC HEALTH STATISTICS BRANCH

DIABETES MELLITUS

NORTH CAROLINA 1971 - 1973

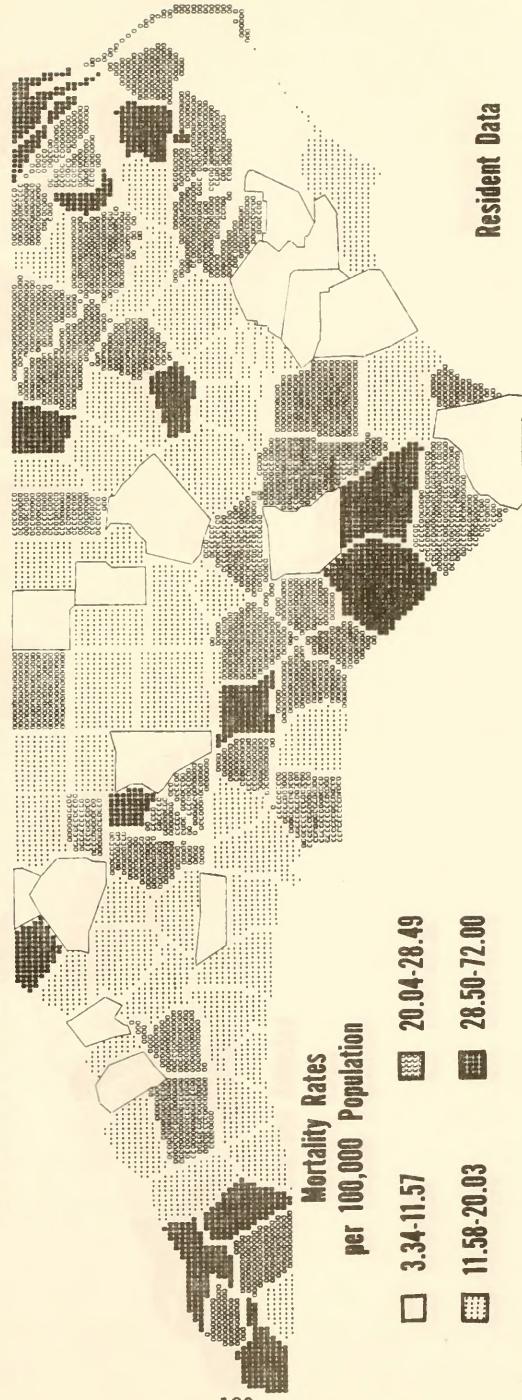


FIGURE 19.A

DIABETES MELLITUS

NORTH CAROLINA 1971 - 1973

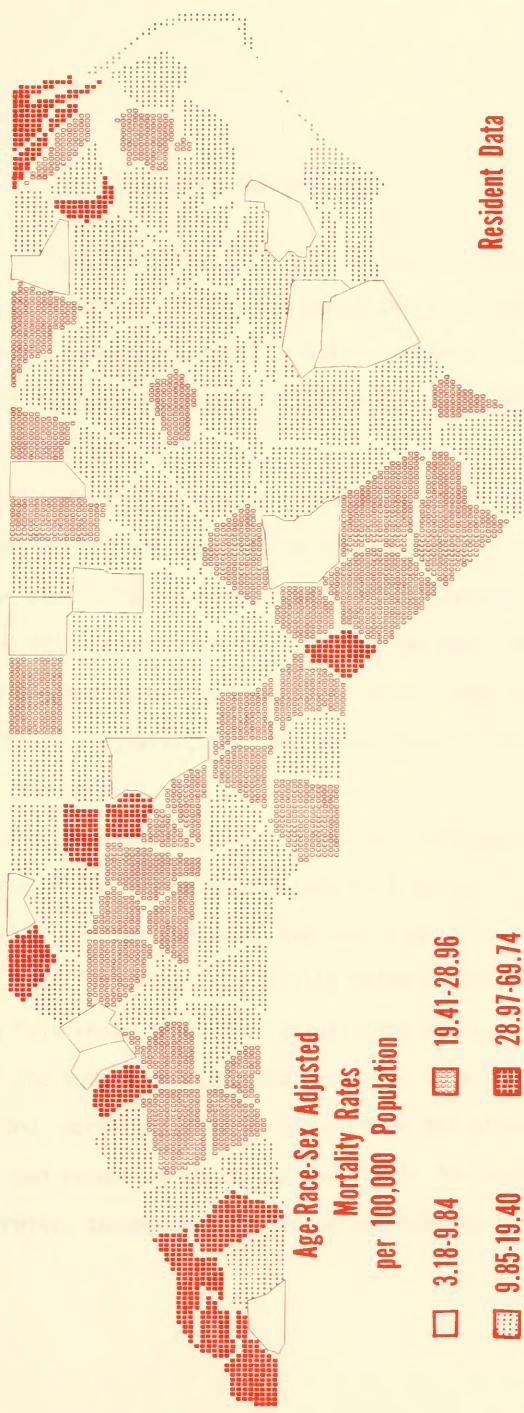


FIGURE 19.B

INFLUENZA AND PNEUMONIA

Since mortality from these diseases is greatly affected by epidemics, death rates for both the United States and North Carolina have been marked by fluctuation. However, some improvement in North Carolina's influenza and pneumonia mortality may be indicated by slightly declining death rates during non-epidemic years since 1960.

During 1973, North Carolina deaths from influenza numbered 149 for a rate of 2.9 deaths per 100,000 population while pneumonia deaths numbered 1,375 for a rate of 26.3. The combined rate of 29.2 compares with a United States rate of 29.8 (2). With a rate of 43.4 for the year, North Carolina nonwhite males had greater mortality from these causes than did other race-sex groups in the State. Agewise, the 1973 death rates increased as age advanced beyond 55 years.

During 1971-73, major high-risk areas for influenza and pneumonia mortality involved counties in the mountainous West and the coastal East (Figure 20.A). Adjustment for age, race and sex (Figure 20.B) served to reduce the average county rate from 31.3 to 28.1 with notable reductions for several counties including Polk whose level-four actual rate corresponded to a level-two adjusted rate. At the same time, adjusted rates for some counties, including Onslow and Cumberland, were considerably higher than the actual rates meaning that low influenza and pneumonia mortality was due to favorable age, race and sex factors. Otherwise, these counties had unfavorable conditions during 1971-73.

TABLE 20

MORTALITY STATISTICS FOR 1973 AND 1971-1973

NORTH CAROLINA RESIDENTS

INFLUENZA AND PNEUMONIA

GEOGRAPHICAL AREA	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
NORTH CAROLINA	1524	29.15	28.43	28.43
DHR REGIONS				
EASTERN	342	30.47	30.15	30.07
SOUTH CENTRAL	310	26.60	25.91	28.40
NORTH CENTRAL	322	27.99	25.88	25.48
WESTERN	550	30.72	30.62	29.79
COUNTIES				
ALAMANCE	19	18.95	19.11	19.25
ALEXANDER	9	43.50	47.32	55.37
ALLEGHANY	8	95.26	60.03	34.30
ANSON	14	59.64	45.27	34.70
ASHE	10	51.74	35.81	20.95
AVERY	3	22.29	30.03	19.25
BEAUFORT	17	47.47	49.11	40.85
BERTIE	10	47.91	31.91	27.76
BLADEN	9	33.73	32.42	29.18
BRUNSWICK	11	39.33	27.17	26.05
BUNCOMBE	66	44.96	39.96	29.66
BURKE	10	16.08	31.72	31.87
CABARRUS	16	20.88	22.25	21.61
CALDWELL	15	25.53	24.66	30.16
CAMDEN	1	17.95	24.00	20.29
CARTERET	5	15.23	31.65	34.34
CASWELL	9	47.30	29.65	25.90
CATAWBA	24	25.26	27.62	34.88
CHATHAM	10	33.71	31.33	26.80
CHEROKEE	6	35.81	31.96	21.94
CHOWAN	4	36.79	24.57	13.02
CLAY	1	18.88	18.87	.5.89
CLEVELAND	20	26.85	23.33	23.49
COLUMBUS	11	22.82	27.70	28.16
CRAVEN	13	20.16	16.61	21.80
CUMBERLAND	59	27.36	22.44	44.17
CURRITUCK	1	12.51	38.98	30.56
DARE	2	26.07	35.14	24.76
DAVIDSON	28	28.31	23.75	24.49
DAVIE	2	10.35	24.22	19.22
DUPLIN	10	26.30	27.14	26.82
DURHAM	32	23.60	29.72	28.02
EDGECOMBE	13	24.53	25.95	28.52
FORSYTH	45	20.32	20.91	21.98
FRANKLIN	8	28.89	25.36	21.76
GASTON	48	31.68	34.46	37.66
GATES	8	95.28	67.19	48.10
GRAHAM	2	32.70	21.25	15.85
GRANVILLE	6	18.35	23.28	20.18
GREENE	6	40.15	22.10	20.28
GUILFORD	96	32.27	26.52	27.59
HALIFAX	22	41.09	31.00	26.35
HARNETT	13	25.29	28.12	30.48

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

MORTALITY STATISTICS FOR 1973 AND 1971-1973, NORTH CAROLINA RESIDENTS
INFLUENZA AND PNEUMONIA CONT'D.

COUNTIES (CONT'D)	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
HAYWOOD	12	27.94	39.83	26.84
HENDERSON	26	58.82	49.92	37.71
HERTFORD	7	30.14	22.91	15.41
HOKE	2	11.69	23.53	17.93
HYDE	3	56.38	49.02	28.70
IREDELL	19	25.01	29.33	26.81
JACKSON	10	44.91	38.94	39.88
JOHNSTON	16	25.46	22.85	22.61
JONES	0	0.00	20.54	20.87
LEE	8	24.96	21.08	20.75
LENOIR	27	47.42	41.70	42.61
LINCOLN	14	40.19	24.26	28.49
MCDOWELL	8	25.79	38.70	30.51
MACON	7	41.11	43.71	64.03
MADISON	12	76.28	60.75	31.82
MARTIN	10	41.43	61.60	58.08
MECKLENBURG	100	27.38	27.22	30.89
MICHELL	5	37.38	39.43	22.46
MONTGOMERY	11	57.42	58.76	48.78
MOORE	15	36.48	34.36	27.94
NASH	29	47.85	43.02	40.70
NEW HANOVER	23	25.83	25.79	25.93
NORTHAMPTON	11	47.43	32.57	27.15
ONSLOW	17	17.15	15.05	39.07
ORANGE	8	12.60	19.89	24.30
PAMLICO	4	42.76	31.96	21.77
PASQUOTANK	7	25.58	28.06	22.08
PENDER	5	27.66	38.62	27.30
PERQUIMANS	2	23.83	27.56	16.22
PERSON	5	19.03	20.31	20.61
PITT	17	22.68	28.92	27.57
POLK	7	58.63	41.85	26.68
RANDOLPH	23	29.01	27.08	30.85
RICHMOND	9	22.20	18.14	16.83
ROBESON	24	27.54	27.29	26.22
ROCKINGHAM	21	28.12	34.53	32.09
ROWAN	19	21.05	23.54	20.46
RUTHERFORD	16	32.60	38.10	31.48
SAMPSON	13	27.60	27.02	25.28
SCOTLAND	5	17.90	28.94	28.49
STANLY	15	34.25	27.41	25.12
STOKES	9	35.22	34.36	25.82
SURRY	19	35.66	41.62	38.23
SWAIN	4	42.13	35.86	32.38
TRANSYLVANIA	3	15.12	20.19	17.03
TYRRELL	0	0.00	25.67	13.38
UNION	8	13.73	16.82	17.75
VANCE	16	50.78	37.73	28.73
WAKE	62	25.35	22.44	27.02
WARREN	9	53.05	29.72	30.22
WASHINGTON	4	29.30	36.26	31.19
WATAUGA	5	20.35	17.69	13.88
WAYNE	22	24.99	26.96	30.41
WILKES	14	26.80	24.48	18.69
WILSON	20	34.94	37.00	40.71
YADKIN	7	26.88	16.85	11.22
YANCEY	8	60.82	40.66	56.94

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION II)

INFLUENZA AND PNEUMONIA

NORTH CAROLINA 1971 - 1973

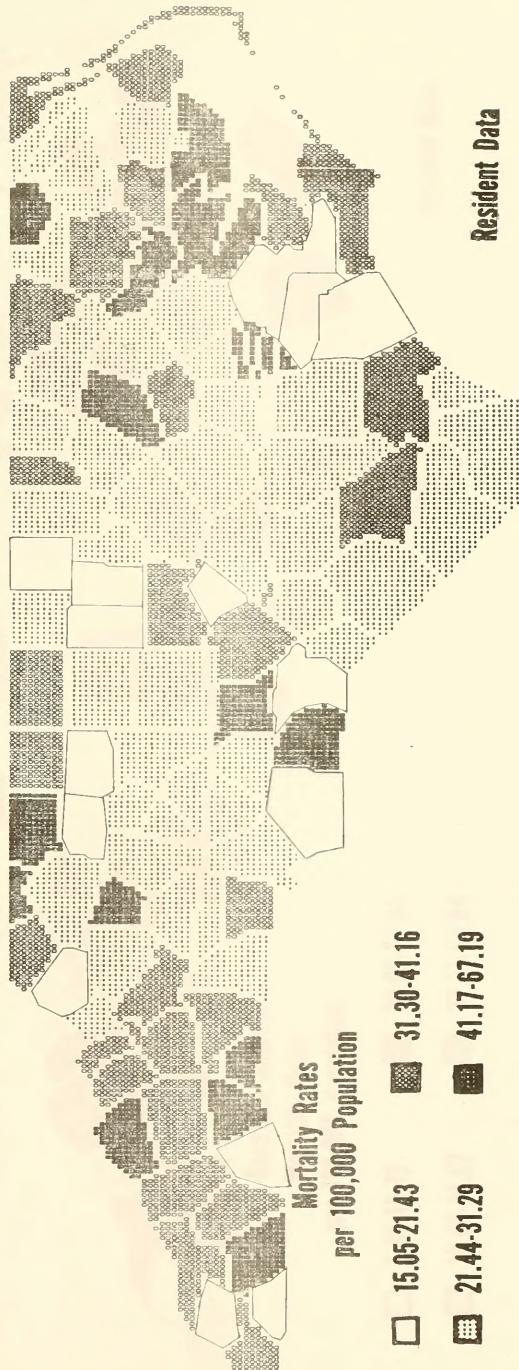


FIGURE 20.A

INFLUENZA AND PNEUMONIA

NORTH CAROLINA 1971 - 1973

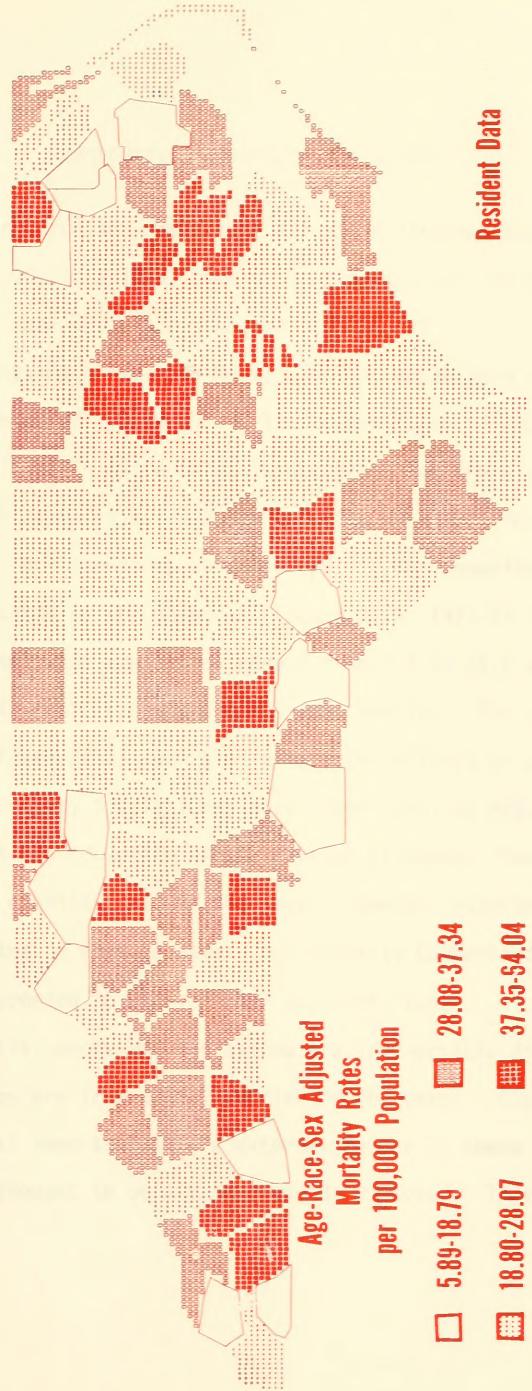


FIGURE 20.B

BRONCHITIS, EMPHYSEMA AND ASTHMA

The North Carolina death rate for these diseases has risen more than 50 percent since 1960 to a 1973 level of 11.5 deaths per 100,000 population. The United States rate in 1973 was higher at 14.2 (2).

For emphysema alone, the North Carolina death rate has nearly tripled since 1960 to a level of 7.9 in 1973. The predominance of emphysema, as well as chronic bronchitis, in white males is notable. For these two diseases combined, the 1973 death rates in North Carolina were 19.7 for white males, 4.8 for white females, 6.9 for nonwhite males and 1.5 for nonwhite females.

As indicated by the legend of Figure 21.A, 1971-73 county death rates for bronchitis, emphysema and asthma ranged from 3.9 to 35.2 with major high-risk areas involving both Eastern and Western counties. For several counties, adjusted rates (Figure 21.B), which eliminate the effects of age, race and sex differences among county populations, were lower than the actual rates with substantial reductions occurring in the case of Alleghany, Cherokee, Clay, Macon, Madison, and Polk counties, all in the West. However, adjustment resulted in notably higher rates in some counties, particularly Cumberland whose level-one actual rate corresponded to a level-four adjusted rate.

Bronchitis, emphysema and asthma are irreversible diseases, seldom detected until they are irrevocably settled in the chest. Cigarette smoking is considered the most important single external factor in these diseases, and high air pollution is thought to be a major secondary factor. Thus, the 1973 county

death rates for these diseases have been examined in relation to data pertaining to air quality in the State. These data, provided by the North Carolina Division of Environmental Management, involve (1) 1973 measures of "particulate concentration" as recorded by 158 sampling stations located in sixty-nine of the State's 100 counties and (2) 1973 measures of "particulate emission" for all North Carolina industries which annually emit at least 25 tons of any pollutant.

Data analysis revealed no positive correlation between either of the measures described above and the adjusted death rates for bronchitis, emphysema and asthma. Generally, annual mean particulate concentrations tended to be highest in the North Central and Western regions, and highest particulate emissions were also observed in Western counties.

A final comment on respiratory disease should serve to challenge environmentalists and health officials throughout the State. That is, that emphysema and lung cancer are two of three major diseases for which death rates are spiraling upward. The other is cirrhosis of the liver.

TABLE 21

MORTALITY STATISTICS FOR 1973 AND 1971-1973

NORTH CAROLINA RESIDENTS

BRONCHITIS, EMPHYSEMA AND ASTHMA

GEOGRAPHICAL AREA	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
NORTH CAROLINA	603	11.53	12.30	12.30
DHR REGIONS				
EASTERN	132	11.76	11.98	13.15
SOUTH CENTRAL	119	10.21	11.13	13.33
NORTH CENTRAL	121	10.51	12.27	11.83
WESTERN	231	12.90	13.27	11.56
COUNTIES				
ALAMANCE	14	13.96	11.06	10.78
ALEXANDER	4	19.33	13.05	11.69
ALLEGHANY	1	11.90	20.01	11.89
ANSON	2	8.52	11.31	11.01
ASHE	4	20.69	18.76	9.83
AVERY	3	22.29	25.03	17.32
BEAUFORT	5	13.96	13.90	11.62
BERTIE	7	33.53	20.74	24.26
BLADEN	3	11.24	12.47	11.82
BRUNSWICK	3	10.72	13.58	14.35
BUNCOMBE	31	21.12	21.79	15.39
BURKE	3	4.82	7.52	6.42
CABARRUS	6	7.83	12.21	11.90
CALDWELL	5	8.51	10.89	10.16
CAMDEN	0	0.00	6.00	5.19
CARTERET	5	15.23	16.34	15.64
CASWELL	2	10.51	12.21	13.78
CATAWBA	20	21.05	14.51	14.04
CHATTHAM	4	13.48	17.90	15.06
CHEROKEE	2	11.93	13.98	8.02
CHOWAN	3	27.59	18.42	13.80
CLAY	0	0.00	18.87	9.51
CLEVELAND	7	9.39	10.76	10.37
COLUMBUS	7	14.52	10.38	11.02
CRAYEN	5	7.75	8.82	12.49
CUMBERLAND	17	7.88	8.10	18.53
CURRITUCK	1	12.51	21.65	20.26
DARE	1	13.03	35.14	21.15
DAVIDSON	9	9.10	11.53	11.16
DAVIE	4	20.71	13.84	10.27
DUPLIN	3	7.89	14.00	14.29
DURHAM	22	16.22	15.85	16.96
EDGECOMBE	8	15.09	11.39	12.43
FORSYTH	27	12.19	15.31	16.52
FRANKLIN	2	7.22	6.04	5.56
GASTON	23	15.18	14.36	13.86
GATES	1	11.91	3.95	1.54
GRAHAM	0	0.00	31.88	19.23
GRANVILLE	3	9.17	14.17	16.02
GREENE	1	6.69	11.05	12.01
GUILFORD	22	7.39	10.15	10.60
HALIFAX	4	7.47	10.54	9.19
HARNETT	4	7.78	5.88	6.11

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

MORTALITY STATISTICS FOR 1973 AND 1971-1973, NORTH CAROLINA RESIDENTS
BY ONCHITIS, EMPHYSEMA AND ASTHMA CONT'D.

COUNTIES (CONT'D)	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
HAYWOOD	4	9.31	14.05	8.41
HENDERSON	7	15.83	23.45	16.31
HERTFORD	0	0.00	14.32	14.79
HOKE	1	5.84	5.88	4.63
HYDE	0	0.00	12.25	7.80
TREDELL	9	11.84	11.55	10.03
JACKSON	1	4.49	8.98	7.99
JOHNSTON	6	9.54	17.00	15.73
JONES	4	41.63	27.39	29.30
LEE	1	3.12	15.81	15.93
LENOIR	6	10.53	9.39	12.00
LINCOLN	6	17.22	14.56	12.25
MCDOWELL	5	16.12	12.90	9.24
MACON	2	11.74	15.89	7.48
MADISON	5	31.78	20.94	10.46
MARTIN	4	16.57	16.42	16.87
MECKLENBURG	26	7.11	8.48	10.24
MICHELL	5	37.38	27.11	12.93
MONTGOMERY	3	15.66	12.09	10.06
MOORE	7	17.02	15.54	12.00
NASH	10	16.50	11.03	10.34
NEW HANOVER	9	10.10	9.10	9.56
NORTHAMPTON	5	21.56	11.33	9.64
ONSLOW	5	5.04	4.01	10.00
ORANGE	2	3.15	4.83	6.57
PAMLICO	3	32.07	28.41	21.97
PASQUOTANK	5	18.27	10.98	10.85
PENDER	2	11.06	11.03	8.39
PERQUIMANS	0	0.00	3.93	2.53
PERSON	2	7.61	11.42	11.23
PITT	8	10.67	13.79	17.44
POLK	2	16.75	13.95	6.94
RANDOLPH	6	7.56	8.04	6.71
RICHMOND	2	4.93	9.89	9.45
ROBESON	9	10.32	10.37	13.68
ROCKINGHAM	12	16.07	18.38	15.89
ROWAN	19	21.05	15.08	12.21
RUTHERFORD	5	10.18	9.52	8.01
SAMPSON	2	4.24	9.24	8.92
SCOTLAND	4	14.32	13.26	17.22
STANLY	5	11.41	11.42	8.81
STOKES	1	3.91	7.93	6.27
SURRY	6	11.26	18.28	13.24
SWAIN	1	10.53	21.52	14.15
TRANSYLVANIA	3	15.12	13.46	10.07
TYRRELL	0	0.00	8.55	8.49
UNION	3	5.15	9.86	9.83
VANCE	2	6.34	8.38	8.87
WAKE	30	12.26	10.94	13.78
WARREN	4	23.57	17.83	14.54
WASHINGTON	1	7.32	9.67	10.63
WATAUGA	3	12.21	17.69	15.30
WAYNE	6	6.81	14.05	17.27
WILKES	7	13.40	9.66	9.08
WILSON	10	17.47	17.34	18.53
YADKIN	5	19.20	10.37	7.27
YANCEY	4	30.41	22.87	12.91

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

BRONCHITIS, EMPHYSEMA AND ASTHMA

NORTH CAROLINA 1971 - 1973

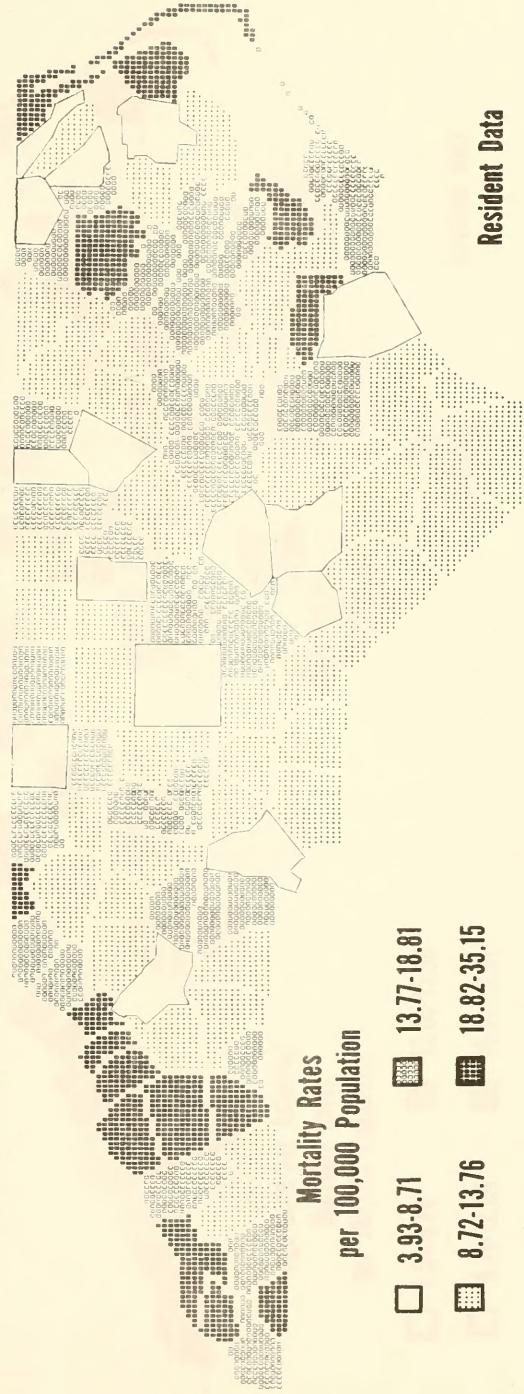


FIGURE 21.A

BRONCHITIS, EMPHYSEMA AND ASTHMA

NORTH CAROLINA 1971 - 1973

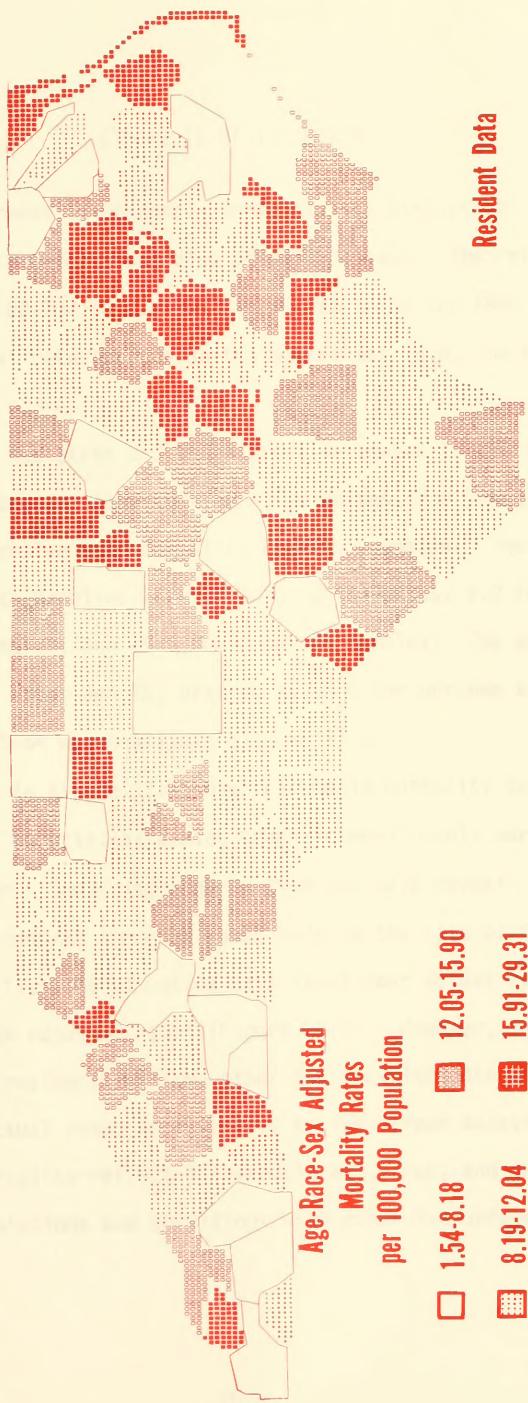


FIGURE 21.B

CIRRHOSIS OF THE LIVER

Recent trends in cirrhosis mortality are disturbing! During 1973, a total of 777 North Carolinians died of this disease. The resulting death rate was 14.9 per 100,000 population, more than twice the 1960 rate of 6.1. The 1973 provisional rate for the United States was 16.0, the highest ever recorded (36).

For both the State and the Nation, increases in cirrhosis mortality have been far greater for nonwhites than for whites, for younger persons than for older, and excessive male mortality remains unabated. The 1973 cirrhosis death rates in North Carolina were 17.4 for white males, 9.0 for white females, 22.3 for nonwhite males, and 19.5 for nonwhite females. The age-specific death rates rose sharply after age 25, peaking at 45.8 for persons age 55-64. The rate for persons 45-54 was nearly as high at 41.5.

As shown in Figure 22.A, high cirrhosis mortality during 1971-73 involved a belt of counties extending from Richmond County northeasterly to the Virginia border. Comparing Figures 22.A and 22.B reveals that age, race, and sex factors accounted for high rates only in the case of Polk and Warren counties. Generally, other counties with level-four actual rates (Figure 22.A) had comparably high adjusted rates (Figure 22.B). However, adjustment revealed increased risk to residents of some other counties including Cherokee and McDowell whose level-two actual rates corresponded to level-four adjusted rates. This means that low mortality reflected favorable age, race, and sex characteristics of the county populations and conditions were otherwise unfavorable during 1971-73.

With respect to Mitchell County's exceptionally high adjusted rate, it is noted that the county had only 5 deaths during the three-year period and none during 1973. The high rate may be attributed to random fluctuation.

Data supplied by the Distilled Spirits Institute indicate that between 1963 and 1972 North Carolina's per capita consumption of distilled spirits increased 50 percent to a level of 1.51 gallons (37,38). Although cirrhosis is not always alcohol-related, a preponderance of the cases are. Thus, it is not surprising that county sales of distilled spirits appear associated with the incidence of cirrhosis mortality. To explain, during fiscal year 1973, eighty-four counties had legalized sale of distilled spirits throughout the county or in one or more of the county's municipalities (39). Recognizing that sales involve both residents and non-residents of a county, each county's "apparent" per capita dollar sale of distilled spirits has been computed (5,39). As expected, some of the highest sales occurred in counties which border other states, border "dry" counties or cater to heavy tourism. Otherwise, apparent per capita sales corresponded well with the adjusted death rates of Figure 22.B, viz., high sales in high rate counties and vice versa. Among the thirteen counties with level-four adjusted rates, eight (62%) had apparent per capita sales above the State per capita of \$36. For the entire thirteen counties, per capitias ranged from "no sales" (2 counties) to \$64; the median was \$44 and the mean \$37. In contrast to this, among twenty-seven counties with level-one adjusted rates, only eight (30%) had apparent per capita sales in excess of the State per capita of \$36. For the entire twenty-seven counties, per capitias ranged from "no sales" (12 counties) to \$107 (Alleghany); the median was \$16 and the mean \$21.

In conclusion of the discussion of cirrhosis of the liver mortality, it is emphasized that the analyses presented here are not intended to undermine the sale of distilled spirits. Rather, they are objective assessments of facts relating to the apparent availability of distilled spirits and the incidence of cirrhosis mortality. As such, these findings are presented solely as information to be utilized by those concerned with mental health and alcohol rehabilitation in our State.

TABLE 22

MORTALITY STATISTICS FOR 1973 AND 1971-1973

NORTH CAROLINA RESIDENTS

CIRRHOSIS OF THE LIVER

GEOGRAPHICAL AREA	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
NORTH CAROLINA	777	14.86	13.44	13.44
DHR REGIONS				
EASTERN	178	15.86	13.65	13.94
SOUTH CENTRAL	174	14.93	14.11	15.00
NORTH CENTRAL	183	15.91	13.38	13.06
WESTERN	242	13.51	12.91	14.01
COUNTIES				
ALAMANCE	8	7.98	9.72	9.13
ALEXANDER	4	19.33	14.68	12.48
ALLEGHANY	1	11.90	4.00	3.15
ANSON	1	4.26	9.90	7.75
ASHE	2	10.34	8.52	6.12
AVERY	0	0.00	2.50	2.16
BEAUFORT	7	19.54	18.53	17.30
BERTIE	1	4.79	9.57	8.69
BLADEN	2	7.49	9.97	9.99
BRUNSWICK	5	17.88	12.35	12.01
BUNCOMBE	24	16.35	17.71	17.81
BURKE	9	14.47	12.90	15.92
CABARRUS	4	5.22	9.59	9.66
CALDWELL	4	6.80	8.60	17.21
CAMDEN	1	17.95	6.00	4.19
CARTERET	7	21.32	19.40	18.36
CASWELL	3	15.76	10.46	12.76
CATAWBA	15	15.79	12.03	13.95
CHATHAM	1	3.37	7.83	6.60
CHEROKEE	3	17.90	7.99	19.46
CHOWAN	1	9.19	15.35	12.79
CLAY	0	0.00	6.29	5.90
CLEVELAND	6	8.05	7.62	7.83
COLUMBUS	4	8.30	9.00	9.11
CRAVEN	4	6.20	9.86	12.68
CUMBERLAND	27	12.52	12.46	20.42
CURRITUCK	1	12.51	12.99	13.17
DARE	0	0.00	8.78	12.53
DAVIDSON	9	9.10	6.44	6.81
DAVIE	2	10.35	6.92	5.59
DUPLIN	9	23.67	13.13	12.15
DURHAM	31	22.86	17.33	16.13
EDGECOMBE	11	20.76	20.88	17.56
FORSYTH	39	17.61	16.97	17.04
FRANKLIN	6	21.67	13.28	12.87
GASTON	9	5.94	8.39	8.61
GATES	1	11.91	3.95	3.53
GRAHAM	0	0.00	0.00	0.00
GRANVILLE	3	9.17	13.15	14.33
GREENE	1	6.69	8.84	8.18
GUILFORD	69	23.19	17.94	17.77
HALIFAX	13	24.28	21.08	20.11
HARNETT	7	13.62	15.69	15.64

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

MORTALITY STATISTICS FOR 1973 AND 1971-1973, NORTH CAROLINA RESIDENTS
CIRRHOSIS OF THE LIVER CONT'D.

COUNTIES (CONT'D)	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
HAYWOOD	3	6.98	6.24	4.34
HENDERSON	8	18.09	16.64	13.93
HERTFORD	0	0.00	8.59	6.03
HOKE	1	5.84	15.68	19.24
HYDE	1	18.79	6.12	6.93
IREDELL	8	10.53	12.00	11.92
JACKSON	1	4.49	7.48	9.09
JOHNSTON	11	17.50	17.53	17.04
JONES	2	20.81	6.84	10.87
LEE	10	31.20	16.86	16.40
LENOIR	7	12.29	11.16	12.48
LINCOLN	4	11.48	8.73	10.76
MCDOWELL	5	16.12	7.52	17.86
MACON	1	5.87	7.94	5.50
MADISON	3	19.07	8.37	5.32
MARTIN	4	16.57	6.84	5.27
MECKLENBURG	85	23.27	21.03	21.47
MICHELL	0	0.00	12.32	151.30
MONTGOMERY	2	10.44	6.91	6.49
MOORE	6	14.59	17.18	15.50
NASH	9	14.85	13.23	11.57
NEW HANOVER	35	39.31	27.68	27.34
NORTHAMPTON	0	0.00	7.08	8.87
ONSLOW	5	5.04	6.35	14.57
ORANGE	5	7.87	10.21	13.72
PAMLICO	1	10.69	10.65	9.62
PASQUOTANK	3	10.96	9.76	8.50
PENDER	0	0.00	11.03	9.17
PERQUIMANS	1	11.91	11.81	6.86
PERSON	4	15.22	8.88	8.81
PITT	13	17.34	10.23	10.28
POLK	0	0.00	16.74	10.54
RANDOLPH	3	3.78	5.50	8.24
RICHMOND	9	22.20	19.79	18.72
ROBESON	15	17.21	12.68	14.78
ROCKINGHAM	10	13.39	13.90	12.63
ROWAN	19	21.05	15.08	13.14
RUTHERFORD	3	6.11	7.48	8.89
SAMPSON	7	14.86	9.95	10.22
SCOTLAND	5	17.90	8.44	7.72
STANLY	6	13.70	10.66	11.00
STOKES	2	7.82	6.60	8.36
SURRY	11	20.64	11.35	16.13
SWAIN	1	10.53	3.58	2.71
TRANSYLVANIA	2	10.08	6.73	5.52
TYRRELL	0	0.00	0.00	0.00
UNION	4	6.86	9.28	9.67
VANCE	9	28.56	17.81	15.65
WAKE	34	13.90	15.79	17.13
WARREN	3	17.68	15.85	11.46
WASHINGTON	4	29.30	19.34	17.48
WATAUGA	1	4.07	8.16	7.39
WAYNE	12	13.63	12.53	13.82
WILKES	6	11.48	12.88	12.55
WILSON	15	26.20	20.81	18.71
YADKIN	2	7.68	9.07	6.56
YANCEY	1	7.60	7.62	4.13

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

N.C. DEPARTMENT OF HUMAN RESOURCES, DIVISION OF HEALTH SERVICES
PUBLIC HEALTH STATISTICS BRANCH

CIRRHOSIS OF THE LIVER

NORTH CAROLINA 1971-1973

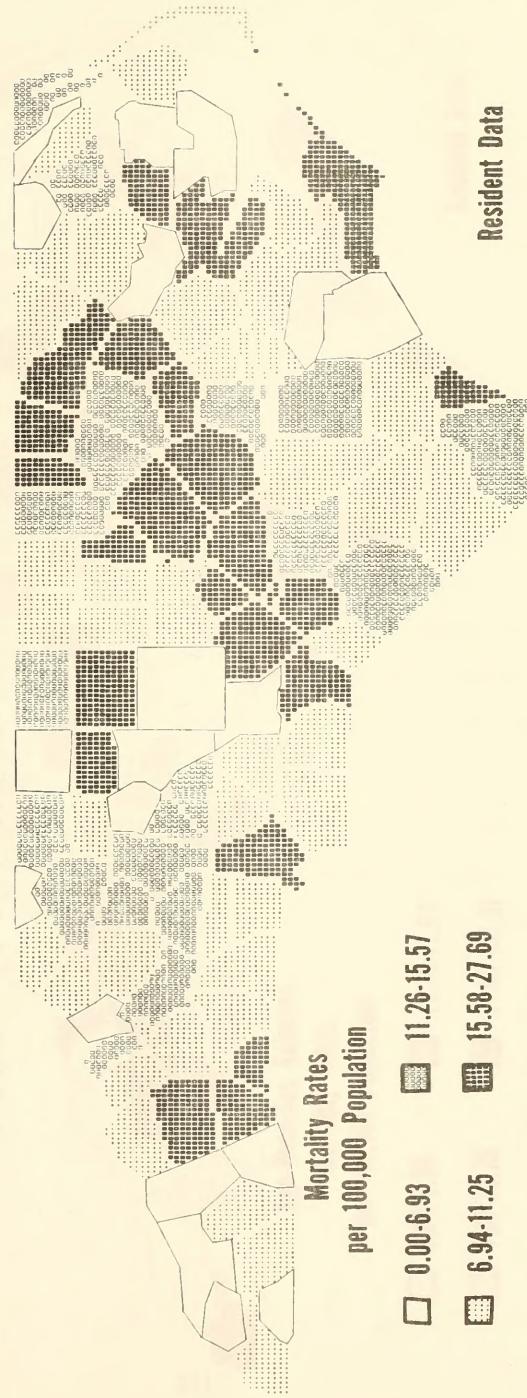


FIGURE 22.A

CIRRHOSIS OF THE LIVER NORTH CAROLINA 1971 - 1973

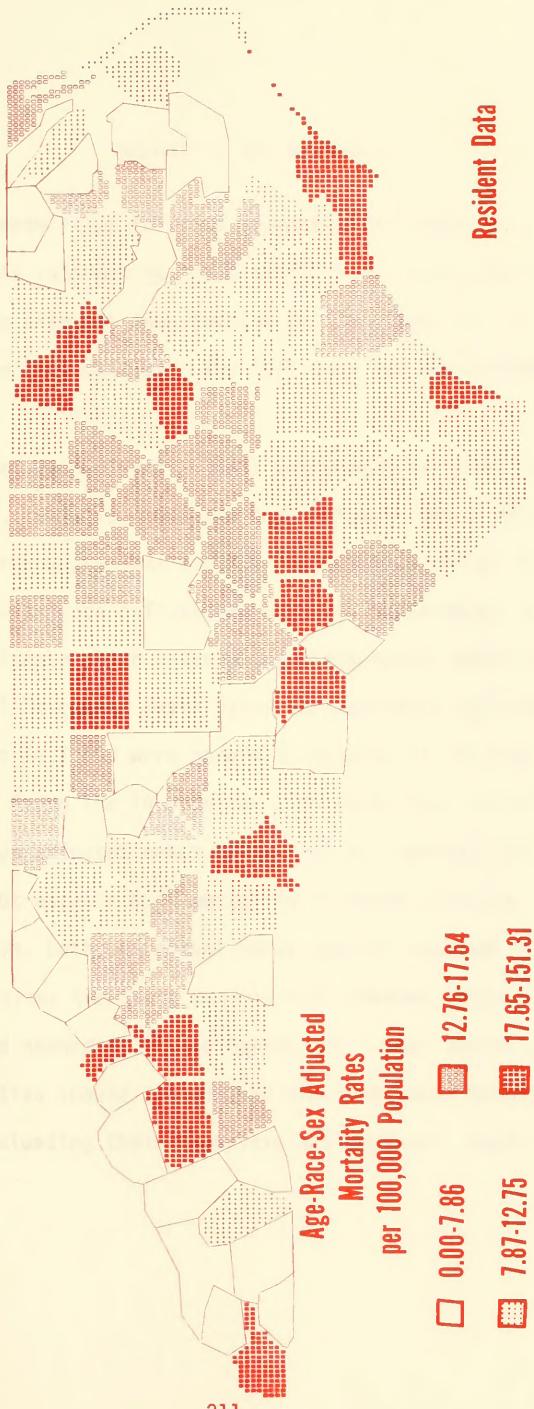


FIGURE 22.B

NEPHRITIS AND NEPHROSIS

While death rates for most diseases are increasing, the nephritis and nephrosis death rate has declined steadily in recent years. Since 1960, the North Carolina rate has been reduced by 39 percent to 4.6 deaths per 100,000 population (241 deaths). The 1973 rate for the United States was lower at 4.0 (2).

Nonwhites remain particularly vulnerable to these causes of mortality. In North Carolina, the 1973 nephritis and nephrosis death rates were 4.1 for white males, 2.8 for white females, 8.6 for nonwhite males, and 8.4 for nonwhite females. These race differences parallel differences in the rates for hypertension, a disease which often accompanies renal insufficiency (15).

The 1971-73 county death rates for nephritis and nephrosis (Figure 23.A) ranged from 0.0 to 14.7 and were generally highest in the Eastern and South Central regions. Among the 19 counties with level-four actual rates, sixteen also had level-four adjusted rates (Figure 23.B), meaning that age, race, and sex factors did not explain high mortality in these counties. In the counties of Jones and Wilson, both the actual rates and the adjusted rates were almost two and one-half times the State rate of 4.6; however, Jones County had only four nephritis and nephrosis deaths during the 3-year period and only one during 1973. Other counties should likewise be aware of small numbers and random fluctuation in evaluating their nephritis and nephrosis death rates.

Unfortunately, renal disease often begins insidiously and may not be detected until chronic irreversible disease is established (15). The Division of Health Services, jointly with local communities, provides for renal disease screening through 32 multiphasic screening clinics located throughout the State.

The Kidney Program of the Division of Health Services estimates that approximately 300 North Carolinians are presently on chronic hemodialysis and that some 68 kidney transplants were performed during fiscal year 1974. The State is fortunate to have eleven dialysis or dialysis-transplant centers in operation and three additional dialysis centers in the planning stage. For medically indigent patients, financial assistance for chronic hemodialysis, nephrectomy and transplantation operations, and drugs may be obtained through the Kidney Program of the Chronic Disease Branch of the Division of Health Services.

TABLE 23

MORTALITY STATISTICS FOR 1973 AND 1971-1973

NORTH CAROLINA RESIDENTS

NEPHRITIS AND NEPHROSIS

GEOGRAPHICAL AREA	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
NORTH CAROLINA	241	4.60	5.11	5.11
DHR REGIONS				
EASTERN	61	5.43	6.30	5.48
SOUTH CENTRAL	53	4.54	4.73	4.63
NORTH CENTRAL	52	4.52	4.54	4.54
WESTERN	75	4.18	4.98	5.61
COUNTIES				
ALAMANCE	5	4.98	5.36	5.60
ALEXANDER	0	0.00	4.89	4.34
ALLEGHANY	0	0.00	0.00	0.00
ANSON	0	0.00	2.82	1.37
ASHE	0	0.00	0.00	0.00
AVERY	1	7.43	2.50	1.99
BEAUFORT	0	0.00	0.92	0.59
BERTIE	1	4.79	6.38	3.41
BLADEN	0	0.00	1.24	1.60
BRUNSWICK	0	0.00	4.94	5.57
BUNCOMBE	5	3.40	4.54	4.39
BURKE	2	3.21	3.22	6.03
CABARRUS	6	7.83	6.98	6.78
CALDWELL	1	1.70	4.01	3.86
CAMDEN	1	17.95	12.00	9.25
CARTERET	1	3.04	6.12	8.84
CASWELL	1	5.25	5.23	4.14
CATAWBA	1	1.05	4.95	6.52
CHATHAM	1	3.37	2.23	1.82
CHEROKEE	0	0.00	5.99	4.46
CHOWAN	0	0.00	3.07	1.39
CLAY	0	0.00	0.00	0.00
CLEVELAND	3	4.02	6.28	6.38
COLUMBUS	4	8.30	9.00	8.62
CRAVEN	5	7.75	8.30	8.89
CUMBERLAND	8	3.71	1.40	2.35
CURRI TUCK	0	0.00	0.00	0.00
DARE	0	0.00	4.39	2.65
DAVIDSON	5	5.05	3.73	4.24
DAVIE	1	5.17	6.92	6.13
DUPLIN	3	7.89	5.25	5.15
DURHAM	10	7.37	6.43	4.52
EDGE COMBE	1	1.88	7.59	5.31
FORSYTH	13	5.87	5.45	5.66
FRANKLIN	2	7.22	7.24	6.00
GASTON	7	4.62	5.74	5.97
GATES	1	11.91	11.85	6.85
GRAHAM	0	0.00	0.00	0.00
GRANVILLE	4	12.23	11.13	8.96
GREENE	0	0.00	0.00	0.00
GUILFORD	9	3.02	4.28	4.36
HALIFAX	5	9.33	9.30	6.95
HARNETT	3	5.83	6.54	6.53

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

MORTALITY STATISTICS FOR 1973 AND 1971-1973, NORTH CAROLINA RESIDENTS
NEPHRITIS AND NEPHROSIS CONT'D.

COUNTIES (CONT'D)	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
HAYWOOD	1	2.32	3.12	2.20
HENOSON	1	2.26	3.78	6.21
HERTFORD	1	4.30	2.86	2.75
HOKE	1	5.84	5.88	5.63
HYDE	0	0.00	0.00	0.00
TREDELL	4	5.26	5.77	5.73
JACKSON	0	0.00	4.49	3.45
JOHNSTON	3	4.77	5.31	5.16
JONES	1	10.40	13.69	11.50
LEE	1	3.12	5.27	5.18
LENOIR	7	12.29	8.81	7.59
LINCOLN	2	5.74	7.76	8.19
MCDOWELL	3	9.67	5.37	4.04
MACON	0	0.00	0.00	0.00
MAOISON	0	0.00	2.09	1.94
MARTIN	2	8.28	5.47	4.78
MECKLENBURG	25	6.84	6.55	7.22
MITCHELL	0	0.00	2.46	2.42
MONTGOMERY	0	0.00	1.72	1.38
MOORE	1	2.43	3.27	2.97
NASH	3	4.95	5.51	5.57
NEW HANOVER	4	4.49	6.44	6.05
NORTHAMPTON	1	4.31	7.08	3.84
ONSLOW	2	2.01	1.33	3.79
ORANGE	2	3.15	2.15	2.43
PAMLICO	0	0.00	3.55	4.14
PASQUOTANK	3	10.96	4.88	3.43
PENOER	3	16.60	14.71	9.37
PERQUIMANS	1	11.91	7.87	5.73
PERSON	0	0.00	0.00	0.00
PITT	2	2.66	7.56	5.70
POLK	0	0.00	5.58	4.91
RANOLPH	1	1.26	2.53	2.09
RICHMOND	7	17.26	10.72	9.23
ROBESON	3	3.44	7.68	5.01
ROCKINGHAM	5	6.69	4.93	4.81
ROWAN	2	2.21	4.78	4.40
RUTHERFORD	0	0.00	3.40	2.90
SAMPSON	2	4.24	10.66	7.71
SCOTLAND	5	17.90	9.64	9.20
STANLY	2	4.56	3.80	4.61
STOKES	0	0.00	1.32	1.28
SURRY	3	5.63	4.41	3.21
SWAIN	0	0.00	0.00	0.00
TRANSYLVANIA	0	0.00	1.68	1.31
TYRRELL	0	0.00	8.55	7.39
UNION	4	6.86	5.80	6.76
VANCE	0	0.00	2.09	1.52
WAKE	6	2.45	4.29	4.75
WARREN	1	5.89	3.96	6.52
WASHINGTON	0	0.00	0.00	0.00
WATAUGA	2	8.14	4.08	2.98
WAYNE	4	4.54	3.79	3.97
WILKES	0	0.00	1.28	1.03
WILSON	5	8.73	13.87	11.19
YAOKE IN	2	7.68	2.59	1.72
YANCEY	3	22.81	10.16	7.78

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

NEPHRITIS AND NEPHROSIS

NORTH CAROLINA 1971 - 1973

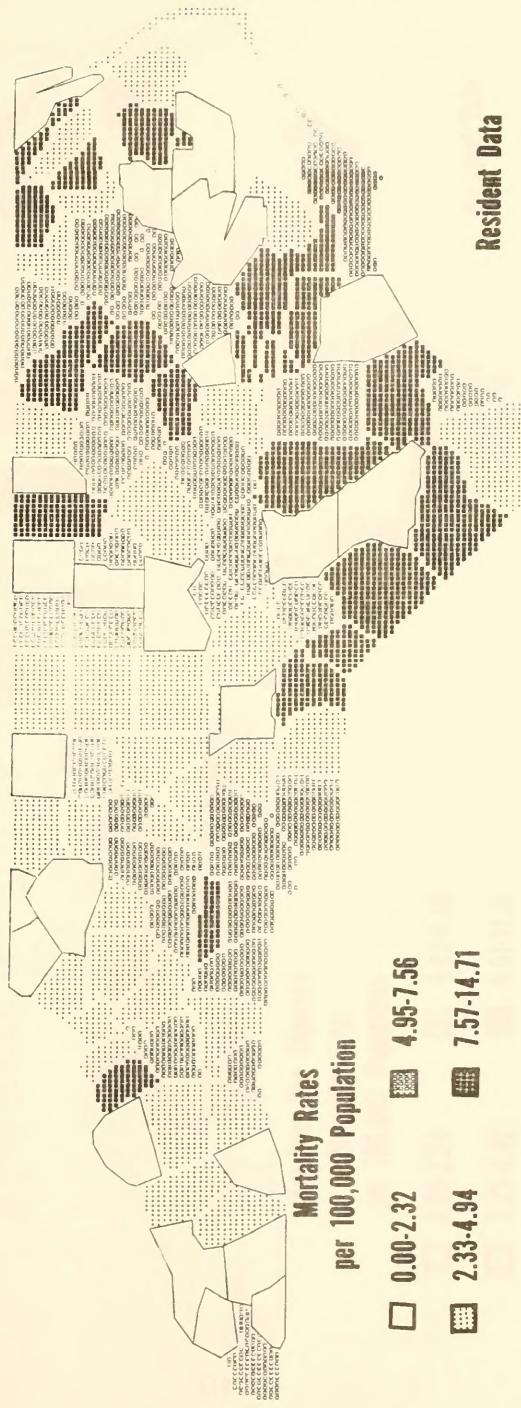


FIGURE 23.A

NEPHRITIS AND NEPHROSIS

NORTH CAROLINA 1971 - 1973

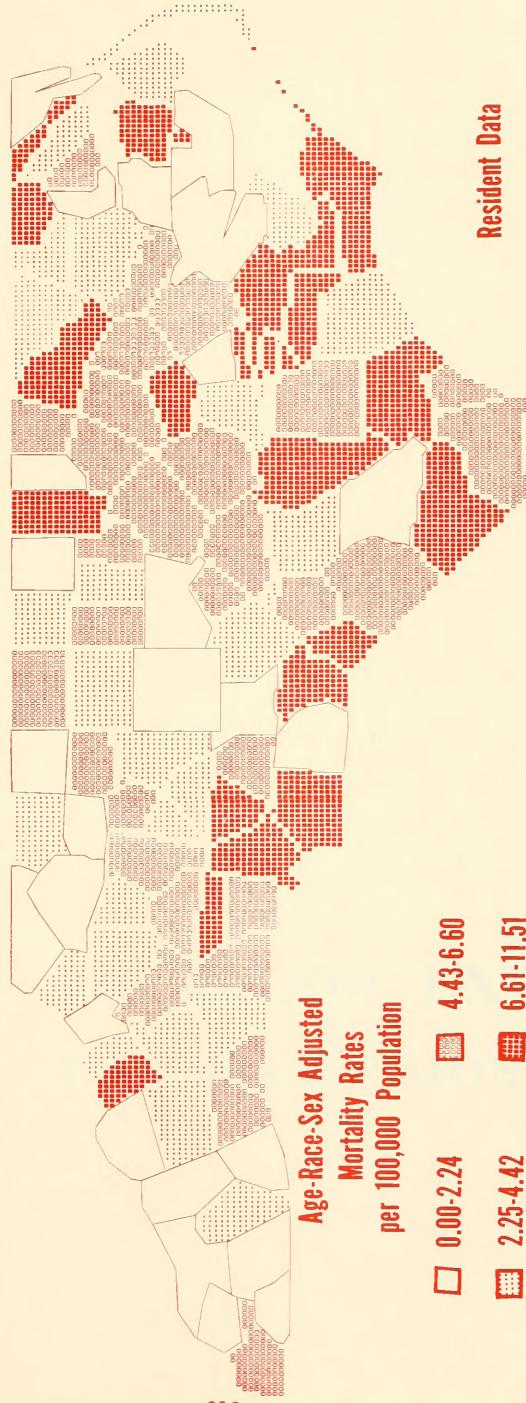


FIGURE 23.B

VII. MAJOR EXTERNAL CAUSES OF MORTALITY

ACCIDENTS

Among total deaths to North Carolina residents during 1971-73, eight percent or 10,839 fatalities resulted from accidental injury. Ranked as the fourth leading cause of death, accidents were exceeded only by heart disease, cancer and cerebrovascular disease as contributors to the mortality toll.

In 1973, the North Carolina occurrence rate for accidental death was 74.2 per 100,000 population, 33 percent higher than the United States rate of 55.8, based on data prepared by the National Safety Council. A total of thirty-nine states experienced rates lower than that for North Carolina. (40)

Among North Carolina residents, motor vehicle accidents were the major cause of accidental deaths. Numbering 1,895, these deaths represented 52 percent of a total 3,628 accidental deaths during 1973. Deaths resulting from falls ranked second, accounting for 403 deaths or 11 percent of all accidental deaths during the year. A large proportion of these deaths (63%) were to persons 65 years of age and over. Fires ranked third among leading causes of accidental deaths accounting for 247 or 7 percent of such deaths in 1973. Rounding out the leading causes of accidental deaths during the year were: drowning, 229 (6%); poisoning by solid and liquid substances, 154 (4%); and firearms, 82 (2%).

The National Safety Council gives the following figures on accidental death for the United States as a whole: motor vehicle, 48%; falls, 14%; drowning, 7%; fires, 5%; poisoning by solid and liquid substances, 3%; and firearms, 2% (40).

In order to obtain a more complete analysis of accidental deaths, accidents have been classified into two principal categories: motor vehicle accidents and accidents excluding motor vehicles. Various characteristics of both the accidents and their victims are examined in the remainder of this synopsis.

Motor Vehicle Accidents

Accounting for 52 percent of the State's accident mortality during 1973, resident motor vehicle deaths numbered 1,895 for the year. The resulting death rate was 36.2 per 100,000 population, more than a third higher than both the 1973 United States rate of 26.6 (40) and the 1960 North Carolina rate of 26.8.

North Carolina's generally steady increase in motor vehicle mortality has occurred chiefly among nonwhites with the nonwhite male rate increasing by 70 percent since 1960 while the nonwhite female rate rose by 143 percent. The 1973 death rates for North Carolina race-sex groups were: white males, 48.1; white females, 16.8; nonwhite males, 80.5; nonwhite females, 22.3.

Agewise, increases in the motor vehicle death rate have been greatest for North Carolinians under age 15, with a rate increase of 40 percent since 1960, and for persons 45-54 years of age with a rate increase of 41 percent. Rates increased by about 30 percent for persons 15-24 and over 55, and nominal

increases occurred at ages 25-44. The 1973 age-specific death rates for motor vehicle accidents ranged from 17.5 for North Carolinians under age 15 to 60.8 for persons 15-24 years of age. Otherwise, lowest rates occurred at ages 35-54 and increased thereafter.

Based on the types of motor vehicle deaths occurring in 1968 (different coding procedures were used in prior years), 1973 deaths involved proportionately more "traffic accidents involving collision between motor vehicles" and proportionately fewer "noncollision motor vehicle traffic accidents." The following rates compare types of motor vehicle fatalities in North Carolina and the United States (40) during 1973:

Type of Motor Vehicle Accident <u>(Traffic and Nontraffic)</u>	Death Rates Per 100,000 Population North Carolina	United States
Collisions between motor vehicles	14.4	11.5
Noncollision in roadway, overturning, running off roadway	10.7	6.8
Pedestrian accidents	6.9	5.0
Collisions with fixed objects	1.2	2.0
Collisions with railroad trains	1.1	0.6
Collisions with pedalcycles	0.5	0.5
Other motor vehicle accidents	1.4	0.2
TOTAL	36.2	26.6

For all types of motor vehicle accidents combined, 44 percent of North Carolina's 1973 fatalities were drivers of a motor vehicle other than a motorcycle, 26 percent were passengers in a motor vehicle other than a motorcycle, and 21 percent were pedestrians or other non-motorists. An

additional five percent of the 1973 fatalities included motorcyclists (79 deaths) and passengers on a motorcycle (8 deaths). The resulting death rate for motorcycle accidents was 1.66 per 100,000 population, 200 percent higher than the rate of 0.54 in 1968. This increase paralleled a comparable increase (194 percent) in the number of motorcycles registered in the State, from 32,448 in 1968 to 95,435 in 1973 (41). The motorcycle death rate for persons under 15 years of age increased by 1,000 percent, from 0.07 in 1968 (1 death) to 0.79 in 1973 (11 deaths). The eleven deaths in 1973 included 9 motorcyclists who illegally operated motorcycles in traffic situations. According to North Carolina law, persons under age 15 cannot be licensed.

Other indicators of North Carolina's motor vehicle mortality are provided by the North Carolina Division of Motor Vehicles and the National Safety Council as follows:

Motor Vehicle Traffic Deaths	Place of Accident		
	North Carolina 1960 (41)	North Carolina 1973 (40)	United States 1973 (40)
Per 100 Million Miles Driven*	6.5	5.3	4.3
Per 10,000 Motor Vehicles Registered	6.4	5.3	4.3

*Estimated from gasoline tax revenue.

Utilizing these indicators provides some comfort in that the state-wide rates have improved since 1960. Compared to the United States as a whole, however, the 1973 North Carolina rates were 23 percent higher. Moreover, only 10 states had higher mileage death rates and only 12 had higher registration death rates than North Carolina (40).

Complete assessment of a county's motor vehicle mortality requires analysis of the county's experience with respect to both residence and occurrence deaths. Thus, in addition to the residence data of Table 24 and corresponding maps, we have computed county rates similar to the registration death rates cited in the preceding table. Shown on page 229, these rates were computed as the number of motor vehicle deaths (traffic and nontraffic) occurring in a county per 10,000 automobiles and trucks registered in the county during 1973 (41).

A comparison of the higher rates on page 229 and those shown in Table 24 reveals both occurrence and residence problems in a number of counties, particularly some located in southcentral portions of the State. On the other hand, some counties' occurrence mortality far exceeded their residence mortality (Hertford and Orange, for example) while other counties' residence mortality was the more unfavorable as in the case of Harnett and Hoke. Each county should undertake analysis of its motor vehicle mortality with respect to both residence and occurrence in order to evaluate such factors as heavy tourism, unsafe driving conditions, and/or high-risk elements in the county's population.

Data shown in Table 24 and corresponding maps will aid in examining motor vehicle mortality among county residents. As shown in Figure 24.A, highest rates for the 1971-73 period were concentrated in two areas. The major high-risk area included southcentral and southeastern counties while a secondary area in the northeast included some coastal counties and several on the Virginia border.

MOTOR VEHICLE DEATHS AND REGISTRATION DEATH RATES
BY COUNTY OF OCCURRENCE

North Carolina, 1973

County of Occurrence	No. of Deaths	Registration Death Rate*	County of Occurrence	No. of Deaths	Registration Death Rate*
North Carolina	1974	5.9			
Alamance	16	2.3	Johnston	19	4.7
Alexander	3	2.1	Jones	2	3.7
Alleghany	1	1.7	Lee	27	11.4
Anson	15	12.0	Lenoir	13	3.7
Ashe	3	2.5	Lincoln	15	6.1
Avery	2	2.5	McDowell	16	8.4
Beaufort	16	7.1	Macon	2	1.9
Bertie	6	5.1	Madison	3	3.4
Bladen	14	9.5	Martin	17	12.4
Brunswick	19	10.8	Mecklenburg	117	4.4
Buncombe	60	6.3	Mitchell	2	2.2
Burke	29	7.5	Montgomery	8	6.5
Cabarrus	15	2.6	Moore	30	10.5
Caldwell	8	2.0	Nash	33	16.3
Camden	0	0.0	New Hanover	46	7.7
Carteret	17	8.7	Northhampton	8	7.4
Caswell	4	4.5	Onslow	38	9.0
Catawba	45	6.3	Orange	40	12.5
Chatham	12	6.8	Pamlico	2	4.3
Cherokee	2	2.0	Pasquotank	9	6.4
Chowan	5	7.6	Pender	8	7.5
Clay	1	2.9	Perquimans	1	1.9
Cleveland	23	4.7	Person	10	6.3
Columbus	34	12.1	Pitt	36	8.0
Craven	28	7.7	Polk	3	3.9
Cumberland	75	6.7	Randolph	31	6.1
Currituck	4	8.1	Richmond	25	10.8
Dare	0	0.0	Robeson	68	13.8
Davidson	26	4.2	Rockingham	22	4.4
Davie	1	0.7	Rowan	17	3.1
Duplin	22	9.6	Rutherford	14	4.5
Durham	73	8.3	Sampson	19	7.2
Edgecombe	12	2.4	Scotland	16	11.0
Forsyth	108	6.7	Stanly	11	3.4
Franklin	20	14.9	Stokes	8	4.7
Gaston	31	3.2	Surry	13	3.2
Gates	7	13.9	Swain	1	1.7
Graham	1	2.7	Transylvania	4	3.1
Granville	9	5.5	Tyrrell	2	10.5
Greene	4	5.6	Union	22	6.5
Guilford	77	3.6	Vance	25	12.5
Halifax	30	11.4	Wake	90	4.7
Harnett	17	5.9	Warren	3	2.8
Haywood	17	6.2	Washington	5	6.1
Henderson	9	2.7	Watauga	5	3.5
Hertford	13	11.4	Wayne	34	6.5
Hoke	2	3.1	Wilkes	23	7.0
Hyde	0	0.0	Wilson	38	10.9
Iredell	19	3.8	Yadkin	7	3.7
Jackson	7	6.0	Yancey	4	5.2

TABLE 24

MORTALITY STATISTICS FOR 1973 AND 1971-1973

NORTH CAROLINA RESIDENTS

MOTOR VEHICLE ACCIDENTS

GEOGRAPHICAL AREA	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
NORTH CAROLINA	1895	36.24	36.79	36.79
DHR REGIONS				
EASTERN	483	43.04	43.42	40.61
SOUTH CENTRAL	488	41.87	41.35	39.10
NORTH CENTRAL	387	33.64	35.53	36.72
WESTERN	537	29.99	30.46	31.62
COUNTIES				
ALAMANCE	29	28.92	27.49	28.97
ALEXANDER	8	38.67	40.79	39.32
ALLEGHANY	1	11.90	20.01	17.78
ANSON	17	72.42	70.74	68.41
ASHE	5	25.87	20.46	16.22
AVERY	2	14.86	27.53	19.99
BEAUFORT	16	44.67	44.48	49.08
BERTIE	12	57.49	51.06	44.67
BLADEN	27	101.20	83.56	75.11
BRUNSWICK	16	57.22	65.46	65.34
BUNCOMBE	45	30.66	24.07	24.05
BURKE	31	49.85	40.86	47.33
CABARRUS	25	32.64	34.03	35.69
CALDWELL	20	34.04	30.97	32.86
CAMDEN	2	35.91	12.00	7.74
CARTERET	20	60.94	36.76	38.92
CASWELL	11	57.81	59.31	51.22
CATAWBA	28	29.47	32.22	32.67
CHATTHAM	12	40.46	61.55	65.78
CHEROKEE	8	47.75	31.96	27.34
CHOWAN	6	55.19	52.21	45.13
CLAY	2	37.77	56.61	38.50
CLEVELAND	25	33.56	30.50	31.70
COLUMBUS	25	51.88	65.10	62.56
RAVEN	22	34.12	39.46	37.02
CUMBERLAND	66	30.61	29.29	28.57
CURRITUCK	4	50.06	60.63	55.78
DARE	4	52.15	57.11	54.86
DAVIDSON	30	30.34	33.59	34.62
DAVIE	4	20.71	32.87	32.34
DUPLIN	27	71.01	58.65	56.29
DURHAM	29	21.39	20.30	20.55
EDGECOMBE	20	37.74	43.04	43.97
FORSYTH	68	30.71	27.74	28.67
FRANKLIN	20	72.24	59.19	47.91
GASTON	45	29.70	28.06	31.52
GATES	6	71.46	43.47	41.24
GRAHAM	3	49.05	42.50	38.75
GRANVILLE	10	30.58	53.65	50.54
GREENE	6	40.15	33.16	34.72
GUILFORD	78	26.22	30.36	31.30
HALIFAX	28	52.30	50.85	48.59
HARNETT	35	68.10	65.40	64.71

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

MORTALITY STATISTICS FOR 1973 AND 1971-1973, NORTH CAROLINA RESIDENTS
MOTOR VEHICLE ACCIDENTS CONT'D.

COUNTIES (CONT'D)	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
HAYWOOD	17	39.58	30.46	24.67
HENDERSON	11	24.88	23.45	26.18
HERTFORD	8	34.45	48.70	52.54
HOKE	8	46.78	72.55	54.65
HYDE	1	18.79	18.38	16.26
IREDELL	19	25.01	28.00	29.47
JACKSON	5	22.45	28.45	31.88
JOHNSTON	25	39.78	46.77	48.67
JONES	6	62.44	41.09	40.74
LEE	14	43.68	51.66	53.62
LENOIR	16	28.10	32.89	34.23
LINCOLN	20	57.42	48.53	49.62
MCDOWELL	11	35.46	29.03	28.53
MACON	3	17.61	25.83	22.44
MADISON	6	38.14	62.84	50.81
MARTIN	14	58.00	52.02	44.00
MECKLENBURG	69	18.89	23.62	24.40
MITCHELL	2	14.95	17.25	12.97
MONTGOMERY	11	57.42	48.39	50.07
MOORE	24	58.37	64.64	66.82
NASH	25	41.25	42.47	39.96
NEW HANOVER	36	40.43	32.24	33.21
NORTHHAMPTON	14	60.36	70.82	45.17
ONSLOW	39	39.35	44.84	39.13
ORANGE	21	33.08	26.88	28.80
PAMLICO	3	32.07	28.41	30.01
PASQUOTANK	5	18.27	20.74	22.85
PENDER	13	71.93	86.44	73.37
PERQUIMANS	1	11.91	19.68	16.94
PERSON	7	26.64	39.35	39.36
PITT	20	26.68	34.70	35.11
POLK	3	25.12	44.64	43.03
RANDOLPH	31	39.10	49.51	52.17
RICHMOND	23	56.74	51.14	48.88
ROBESON	67	76.88	69.19	64.07
ROCKINGHAM	29	38.84	38.57	41.38
ROWAN	32	35.46	32.00	32.60
RUTHERFORD	17	34.64	44.22	47.29
SAMPSON	23	48.84	45.52	44.87
SCOTLAND	17	60.89	54.26	51.71
STANLY	15	34.25	38.08	40.69
STOKES	12	46.96	43.62	41.48
SURRY	23	43.17	42.88	44.86
SWAIN	4	42.13	46.62	52.42
TRANSYLVANIA	3	15.12	20.19	19.28
TYRRELL	1	25.68	25.67	17.84
UNION	21	36.06	37.13	37.62
VANCE	23	73.00	56.59	62.36
WAKE	69	28.21	28.95	29.05
WARREN	7	41.26	53.50	54.38
WASHINGTON	5	36.63	36.26	29.60
WATAUGA	6	24.43	31.30	22.62
WAYNE	32	36.35	34.17	35.67
WILKES	18	34.46	38.00	39.41
WILSON	30	52.41	46.26	43.93
YADKIN	5	19.20	19.44	16.11
YANCEY	7	53.22	43.20	54.82

* SEE SECTION I

**AGE=RACE-SEX ADJUSTED (SEE SECTION I)

MOTOR VEHICLE ACCIDENTS

NORTH CAROLINA 1971-1973

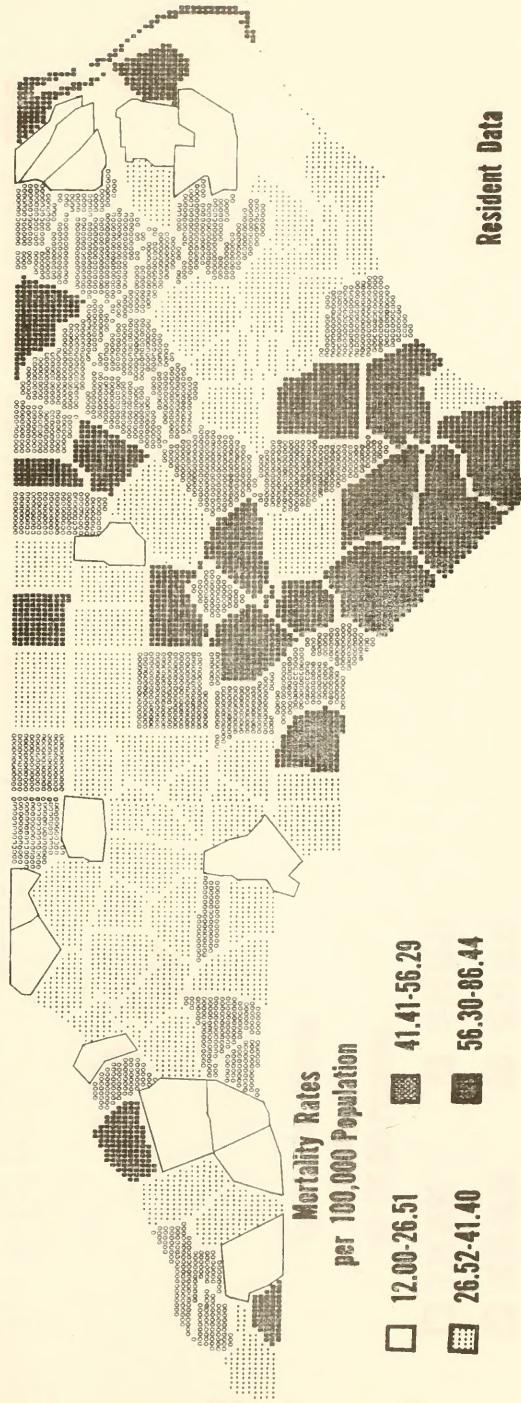


FIGURE 24.A

MOTOR VEHICLE ACCIDENTS

NORTH CAROLINA 1971-1973

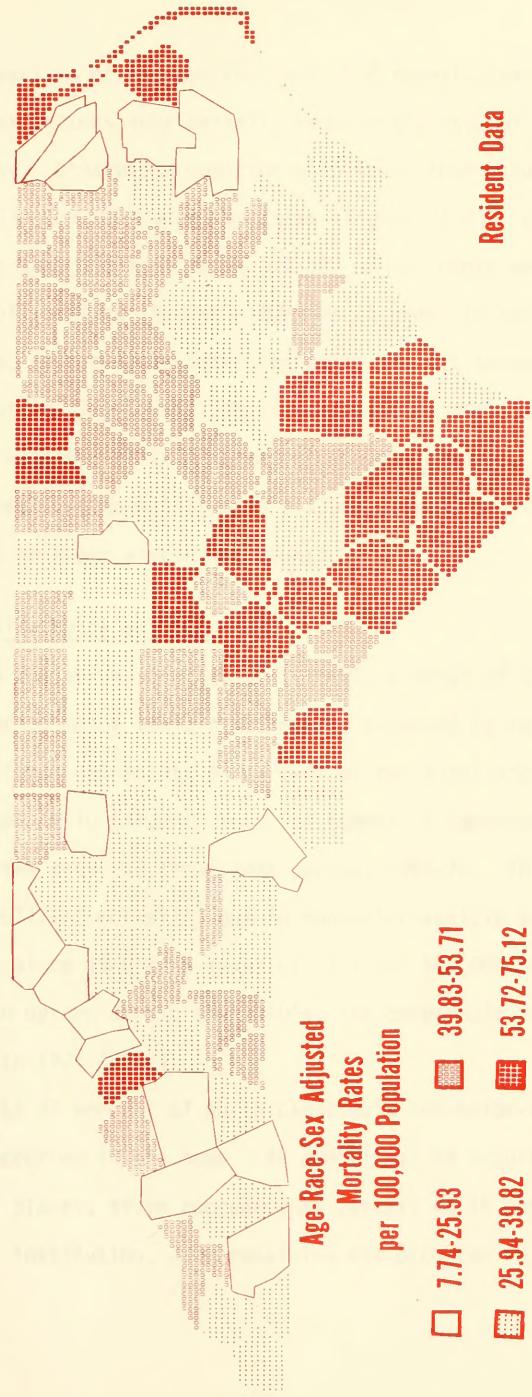


FIGURE 24.B

A comparison of Figures 24.A and 24.B reveals that adjustment for age, race and sex factors substantially reduced the rate of only one level-four county, Clay. Otherwise, counties with level-four actual rates (Figure 24.A) also had high adjusted rates (Figure 24.B), indicating that conditions other than the age, race, and sex of residents were unfavorable. Each county should analyze its own situation in order to resolve areas of need. Since age, race and sex characteristics did not account for high mortality, except in Clay County, driving conditions would need to be investigated if high mortality occurred within the county. Wherever it occurred, high resident mortality may indicate a need for strengthening driver education programs within the county.

Accidents Excluding Motor Vehicles

During the three-year period 1971-73, a total of 5,100 fatal accidents, excluding motor vehicle accidents, occurred to residents of North Carolina. This total represents 48 percent of the total accidental deaths in North Carolina and is 10 percent above the number of comparable fatalities recorded during the previous three-year period, 1968-70. In terms of death rates, North Carolina's mortality due to non-motor-vehicle accidents has risen about 20 percent since 1960 to a level of 33.1 per 100,000 population in 1973. Also following an upturn during the 1960's, the comparable rate for the United States was 28.7 in 1973 (12,2).

At least 37 percent of North Carolina's non-motor-vehicle accident deaths in 1973 occurred in the home. An additional 6% occurred on the farm; 5% in industrial places; 4% in recreational places; 4% in public places; and 3% in a resident institution. The remaining 42% occurred in other or unspecified places.

With a death rate of 7.7, falls were a leading cause of North Carolina's accidental deaths in 1973. Rates for other leading causes of accidental death were: fires, 4.7; drowning, 4.4; poisoning by solid and liquid substances, 3.0; firearms, 1.6. Compared to 1968 when cause of death coding procedures were comparable to those used in 1973, North Carolina's recent increase in non-motor-vehicle mortality has largely involved increased rates for falls, drownings, and poisonings. The rate for poisoning by solid and liquid substances has risen 173 percent since 1968; accidental poisoning by alcohol caused 102 or two-thirds of all such deaths in 1973.

North Carolina's death rates for non-motor-vehicle accidents were highest for older persons, nonwhites, and males. By age, the 1973 rates increased from 15.9 for persons under age 15 to 43.1 at ages 45-54, remained stable at ages 55-64, and rose sharply to 92.1 for persons 65 years of age and older. By race and sex, the annual rates were 42.3 for white males, 17.0 for white females, 69.6 for nonwhite males, and 24.2 for nonwhite females. Falls accounted for the excessive mortality among older persons while accidental drownings accounted for much of the excess among nonwhite males.

The 1971-73 county death rates for non-motor-vehicle accidents are depicted in Figure 25.A. Level-four rates occurred more often in the Eastern Region, while level-one rates occurred least often in the South Central Region. A comparison of Figures 25.A and 25.B reveals that differences in county rates for non-motor-vehicle accidental deaths generally were not attributable to age, race, and sex differences in county populations. Two notable exceptions were that adjustment substantially increased the rates for Watauga and Wilkes, meaning that average mortality in these counties reflected favorable age, race, and sex factors and conditions otherwise were unfavorable for non-motor-vehicle accident mortality during 1971-73.

TABLE 25

MORTALITY STATISTICS FOR 1973 AND 1971-1973

NORTH CAROLINA RESIDENTS

ACCIDENTS EXCLUDING MOTOR VEHICLES

GEOGRAPHICAL AREA	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
NORTH CAROLINA	1733	33.14	32.69	32.69
DHR REGIONS				
EASTERN	442	39.38	36.49	34.60
SOUTH CENTRAL	439	37.67	35.00	34.94
NORTH CENTRAL	305	26.51	28.48	28.67
WESTERN	547	30.55	31.50	32.65
COUNTIES				
ALAMANCE	28	27.93	25.14	25.84
ALEXANDER	6	29.00	29.37	29.53
ALLEGHANY	4	47.63	56.02	38.35
ANSON	10	42.60	48.10	38.71
ASHE	10	51.74	44.34	33.33
AVERY	6	44.58	32.53	25.48
BEAUFORT	15	41.88	45.40	42.81
BERTIE	7	33.53	43.08	43.41
BLADEN	10	37.48	51.13	44.96
BRUNSWICK	15	53.64	37.05	38.05
BUNCOMBE	54	36.79	35.87	37.38
BURKE	14	22.51	30.64	34.49
CABARRUS	19	24.80	25.74	26.68
CALDWELL	23	39.15	33.84	39.18
CAMDEN	0	0.00	24.00	19.88
CARTERET	18	54.84	29.61	31.42
CASWELL	4	21.02	34.89	26.78
CATAWBA	23	24.21	29.74	32.46
CHATHAM	13	43.83	47.00	41.54
CHEROKEE	3	17.90	27.97	35.03
CHOWAN	4	36.79	49.14	41.84
CLAY	1	18.88	37.74	22.29
CLEVELAND	33	44.30	36.79	37.63
COLUMBUS	19	39.42	36.70	35.76
CRAVEN	29	44.98	40.50	43.29
CUMBERLAND	67	31.08	28.05	30.56
CURRITUCK	1	12.51	34.65	30.41
DARE	3	39.11	57.11	67.74
DAVIDSON	25	25.28	24.09	24.31
DAVIE	9	46.61	48.44	52.32
DUPLIN	15	39.45	35.89	32.82
DURHAM	57	42.04	34.42	33.63
EDGECOMBE	21	39.63	34.18	37.96
FORSYTH	51	23.03	24.70	25.62
FRANKLIN	11	39.73	36.24	30.76
GASTON	45	29.70	30.27	33.26
GATES	5	59.55	35.57	21.52
GRAHAM	2	32.70	69.07	74.99
GRANVILLE	10	30.58	34.41	31.06
GREENE	4	26.77	33.16	20.16
GUILFORD	74	24.87	28.67	29.61
HALIFAX	27	50.43	48.37	43.41
HARNETT	34	66.16	56.90	56.83

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

MORTALITY STATISTICS FOR 1973 AND 1971-1973, NORTH CAROLINA RESIDENTS
ACCIDENTS EXCLUDING MOTOR VEHICLES CONT'D.

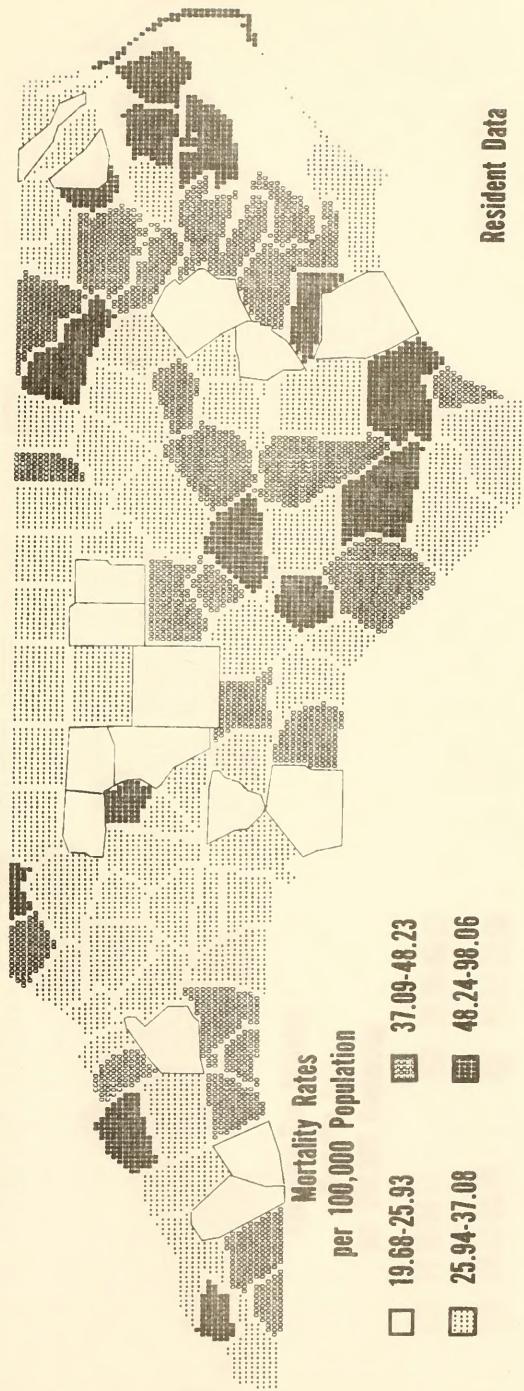
COUNTIES (CONT'D)	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
HAYWOOD	14	32.59	27.33	27.71
HENDERSON	17	38.46	38.58	38.50
HERTFORD	7	30.14	32.94	27.62
HOKE	9	52.63	56.86	52.45
HYDE	1	18.79	98.05	82.56
TREDELL	20	26.32	31.56	30.15
JACKSON	3	13.47	22.46	26.57
JOHNSTON	21	33.41	38.26	39.06
JONES	2	20.81	58.21	55.56
LEE	12	37.44	41.11	40.58
LENOIR	13	22.83	25.84	26.12
LINCOLN	12	34.45	28.15	35.15
MCCOOWELL	9	29.01	25.80	31.83
MACON	3	17.61	39.74	24.97
MADISON	11	69.93	54.46	37.39
MARTIN	12	49.71	45.17	34.30
MECKLENBURG	101	27.65	28.69	30.59
MITCHELL	5	37.38	29.57	18.18
MONTGOMERY	9	46.98	46.66	46.26
MOORE	14	34.05	31.91	30.39
NASH	23	37.95	35.85	34.02
NEW HANOVER	40	44.92	40.20	40.25
NORTHAMPTON	16	68.99	46.74	33.15
ONslow	38	38.34	25.76	34.07
ORANGE	20	31.50	23.65	29.84
PAMLICO	4	42.76	46.17	38.10
PASQUOTANK	12	43.85	35.38	31.70
PENDER	9	49.80	53.33	44.72
PERQUIMANS	3	35.75	19.68	23.15
PERSON	12	45.67	30.46	29.51
PITT	21	28.01	25.36	23.41
POLK	6	50.25	39.06	42.37
RANDOLPH	22	27.75	25.81	31.51
RICHMOND	10	24.67	32.99	31.57
ROBISON	43	49.34	43.43	43.83
ROCKINGHAM	14	18.75	31.39	30.88
ROWAN	21	23.27	26.48	26.21
RUTHERFORD	17	34.64	38.10	42.11
SAMPSON	26	55.21	39.83	35.64
SCOTLAND	9	32.23	27.73	27.22
STANLY	14	31.97	35.03	36.73
STOKES	5	19.56	29.08	35.73
SURRY	13	24.40	32.79	30.90
SWAIN	3	31.60	35.86	29.87
TRANSYLVANIA	5	25.21	23.56	19.53
TYRRELL	3	77.04	68.46	78.32
UNION	12	20.60	23.79	23.93
VANCE	16	50.78	39.82	35.22
WAKE	75	30.66	28.81	31.09
WARREN	4	23.57	33.68	36.80
WASHINGTON	4	29.30	33.84	30.71
WATAUGA	9	36.64	34.03	61.36
WAYNE	27	30.67	30.00	30.15
WILKES	19	36.38	34.78	52.01
WILSON	24	41.93	43.36	38.60
YADKIN	7	26.88	23.33	20.48
YANCEY	3	22.81	43.20	33.42

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

ACCIDENTS EXCLUDING MOTOR VEHICLES

NORTH CAROLINA 1971 - 1973



Resident Data

FIGURE 25.A

ACCIDENTS EXCLUDING MOTOR VEHICLES

NORTH CAROLINA 1971-1973

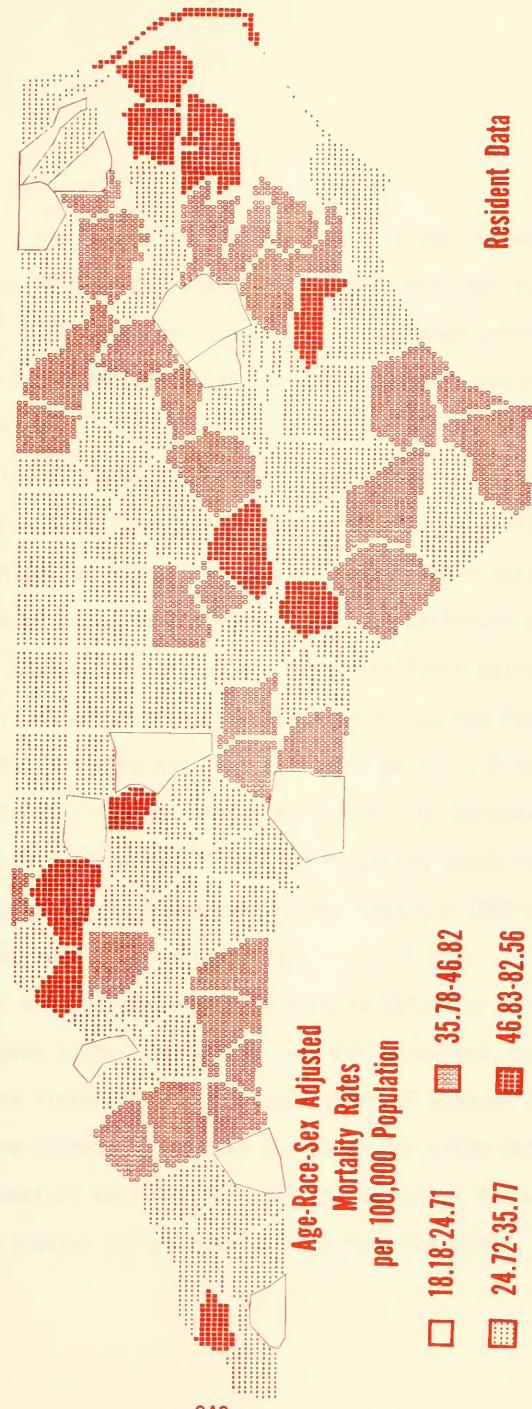


FIGURE 25.B

SUICIDE

Since 1967, the number of suicide deaths in the United States has consistently exceeded 20,000 recorded cases per year with the 1973 total reaching 25,118 (2). In the world as a whole, it has been estimated that an average of at least 1,000 persons a day, or about 500,000 persons a year, die by their own hand (42).

As startling as these figures are, the actual number of suicides is probably much higher. A considerable reporting problem is involved since, in cases of doubtful intent or owing to legal and social repercussions on survivors, the deaths are often recorded as accidents. Various estimates of the occurrence of suicide indicate that the actual number may be at least twice the number being reported (43). Moreover, many suicide attempts do not result in death. The ratio of attempts to deaths has been estimated at about 8 to 1 (42,43).

Among North Carolina residents, a reported 702 persons' will-to-die exceeded their will-to-live during 1973. The resulting death rate was 13.4 deaths per 100,000 population, 46 percent higher than the 1960 rate of 9.2. The United States rate was 12.0 in 1973 (2).

Consistent with national trends, suicide rates for North Carolinians traditionally have been higher for whites than for nonwhites, higher for males than for females, and higher for older people than for younger (43). However, these differences are decreasing as rate increases for other race-sex groups (especially white females) have far exceeded the increases for white males and increases have been greater for younger persons than for older. In 1960, no

suicides were recorded for young people ages 10-14; in 1973, this age group accounted for 7 recorded suicides. Also, the rate for persons 15-24 years old has more than doubled and rates for other "young" age groups have risen appreciably since 1960.

Despite relatively small increases in recent years, white males continue to account for a preponderance of North Carolina's suicides. Death rates for race-sex groups in 1973 were 24.9 for white males, 6.9 for white females, 10.2 for nonwhite males, and 1.3 for nonwhite females. By age, the 1973 death rates increased from a rate of 0.5 for persons under age 15 to a peak rate of 28.5 at ages 45-54.

An examination of the methods used in North Carolina suicides reveals that, for the five years 1969-73, 72 percent were committed through the use of firearms and explosives. For further analysis of methods, division of the ICDA classifications (3) into two groups allows a convenient sub-grouping of "active" versus "passive" methods. Active methods include hanging, strangulation, suffocation, drowning, firearms, explosives, cutting, and jumping from high places. Passive methods include suicide from poisoning by solid and liquid substances and gases.

Differences between sexes and races in suicidal actions are obvious from the following table showing the percentage active and passive methods utilized in North Carolina suicides. The male population shows a strong tendency for active methods of self-destruction while the female population shows an increasing tendency towards passive methods. Also, nonwhites tend to use active methods of suicide more often than whites, but a tendency towards passive methods is increasing in both races.

	1960 Percent		1965 Percent		1970 Percent		1973 Percent	
	Active	Passive	Active	Passive	Active	Passive	Active	Passive
TOTAL	90	10	86	14	87	13	85	15
Male	91	9	88	12	90	10	89	11
Female	89	11	76	24	76	24	72	28
WHITE	90	10	85	15	86	14	84	16
Male	90	10	87	13	89	11	88	12
Female	89	11	75	25	75	25	73	27
NONWHITE	98	2	95	5	92	8	91	9
Male	97	3	95	5	97	3	95	5
Female	100	0	100	0	80	20	62	38

Geographical patterns in suicide (Figure 26.A) reveal highest rates for border counties of the North Central and Western regions, for Dare and Tyrrell counties on the coast, and for two inland counties, Alexander and Harnett. Adjustment for age, race, and sex factors (Figure 26.B) did not substantially reduce any high rates, but Gates County's level-two actual rate corresponded to a level-four adjusted rate. However, Gates had only 3 suicides during 1971-73; all occurred in 1973. Other counties should also be aware of small numbers and corresponding rate fluctuations in evaluating their suicide experience.

TABLE 26

MORTALITY STATISTICS FOR 1973 AND 1971-1973

NORTH CAROLINA RESIDENTS

SUICIDE

GEOGRAPHICAL AREA	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
NORTH CAROLINA	702	13.42	12.48	12.48
DHR REGIONS				
EASTERN	121	10.78	10.67	11.86
SOUTH CENTRAL	142	12.18	11.86	12.93
NORTH CENTRAL	179	15.56	13.46	13.15
WESTERN	260	14.52	13.38	12.36
COUNTIES				
ALAMANCE	16	15.96	12.40	11.69
ALEXANDER	5	24.17	24.47	23.31
ALLEGHANY	5	59.53	32.01	65.25
ANSON	3	12.78	7.07	8.08
ASHE	7	36.21	34.11	25.92
AVERY	2	14.86	15.01	10.36
BEAUFORT	9	25.13	16.68	17.84
BERTIE	0	0.00	3.19	6.39
BLADEN	3	11.24	7.48	8.59
BRUNSWICK	4	14.30	11.11	11.27
BUNCOMBE	25	17.03	14.76	12.55
BURKE	11	17.68	14.51	11.73
CABARRUS	16	20.88	15.27	13.87
CALDWELL	6	10.21	12.61	10.95
CAMOEN	1	17.95	12.00	11.67
CARTERET	3	9.14	11.23	9.73
CASWELL	4	21.02	10.46	11.94
CATAWBA	11	11.57	8.49	8.38
CHATHAM	7	23.60	16.78	16.09
CHEROKEE	2	11.93	5.99	3.89
CHOWAN	0	0.00	6.14	5.41
CLAY	0	0.00	6.29	4.64
CLEVELAND	11	14.76	16.60	16.61
COLUMBUS	7	14.52	15.23	16.28
CRAVEN	5	7.75	8.30	9.01
CUMBERLAND	18	8.34	7.48	9.06
CURRITUCK	1	12.51	8.66	8.75
OARE	0	0.00	17.57	14.01
DAVIDSON	15	15.17	13.23	11.59
OAVIE	4	20.71	15.57	13.48
DUPLIN	4	10.52	13.13	13.26
OURPHAM	12	8.85	8.42	9.42
EDGECOMBE	5	9.43	8.86	11.73
FORSYTH	37	16.71	12.12	12.45
FRANKLIN	3	10.83	14.49	14.96
GASTON	16	10.56	7.73	7.26
GATES	3	35.73	11.85	22.33
GRAHAM	0	0.00	15.94	10.08
GRANVILLE	7	21.41	15.18	15.50
GREENE	2	13.38	11.05	13.19
GUILFORD	37	12.43	11.96	12.12
HALIFAX	5	9.33	10.54	13.61
HARNETT	8	15.56	20.27	20.18

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

MORTALITY STATISTICS FOR 1973 AND 1971-1973, NORTH CAROLINA RESIDENTS
SUICIDE CONT'D.

COUNTIES (CONT'D)	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
HAYWOOD	6	13.97	15.62	12.36
HENDERSON	4	9.04	11.34	11.41
HERTFORD	1	4.30	5.72	6.96
HOKE	2	11.69	5.88	5.26
HYDE	0	0.00	6.12	6.85
IREDELL	5	6.58	13.33	12.21
JACKSON	5	22.45	20.96	23.00
JOHNSTON	7	11.13	16.47	16.02
JONES	0	0.00	6.84	7.33
LEE	2	6.24	12.65	12.51
LENOIR	3	5.26	5.28	5.88
LINCOLN	4	11.48	14.56	12.36
MCDOWELL	6	19.34	12.90	10.17
MACON	7	41.11	23.84	18.39
MADISON	2	12.71	10.47	5.26
MARTIN	3	12.42	10.95	11.85
MECKLENBURG	43	11.77	13.19	13.45
MITCHELL	3	22.42	12.32	9.98
MONTGOMERY	4	20.88	12.09	11.99
MOORE	5	12.16	12.27	12.07
NASH	8	13.20	13.23	14.63
NEW HANOVER	14	15.72	12.89	13.15
NORTHHAMPTON	4	17.24	12.74	16.17
ONSLOW	9	9.08	11.71	13.28
ORANGE	8	12.60	13.44	14.85
PAMLICO	1	10.69	3.55	3.81
PASQUOTANK	4	14.61	12.20	12.16
PENDER	4	22.13	11.03	12.14
PERQUIMANS	1	11.91	11.81	12.68
PERSON	7	26.64	19.04	20.66
PITT	7	9.33	9.34	10.59
POLK	0	0.00	8.37	7.72
RANDOLPH	7	8.82	11.85	11.00
RICHMOND	3	7.40	10.72	11.78
ROBESON	10	11.47	12.30	16.56
ROCKINGHAM	16	21.43	21.97	19.55
ROWAN	16	17.73	13.24	12.22
RUTHERFORD	5	10.18	12.92	12.04
SAMPSON	8	16.99	17.07	18.71
SCOTLAND	4	14.32	8.44	9.82
STANLY	8	18.27	11.42	9.52
STOKES	4	15.65	19.82	19.80
SURRY	12	22.52	18.28	16.90
SWAIN	3	31.60	14.34	13.63
TRANSYLVANIA	4	20.16	15.14	12.19
TYRRELL	0	0.00	25.67	31.28
UNION	7	12.02	11.02	10.68
VANCE	6	19.04	12.57	13.59
WAKE	38	15.53	14.26	14.87
WARREN	1	5.89	7.92	9.19
WASHINGTON	0	0.00	12.08	13.39
WATAUGA	5	20.35	17.69	14.91
WAYNE	4	4.54	8.73	10.27
WILKES	7	13.40	12.24	10.08
WILSON	9	15.72	10.98	12.44
YADKIN	3	11.52	7.77	6.62
YANCEY	3	22.81	15.24	10.96

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

SUICIDE

NORTH CAROLINA 1971 - 1973

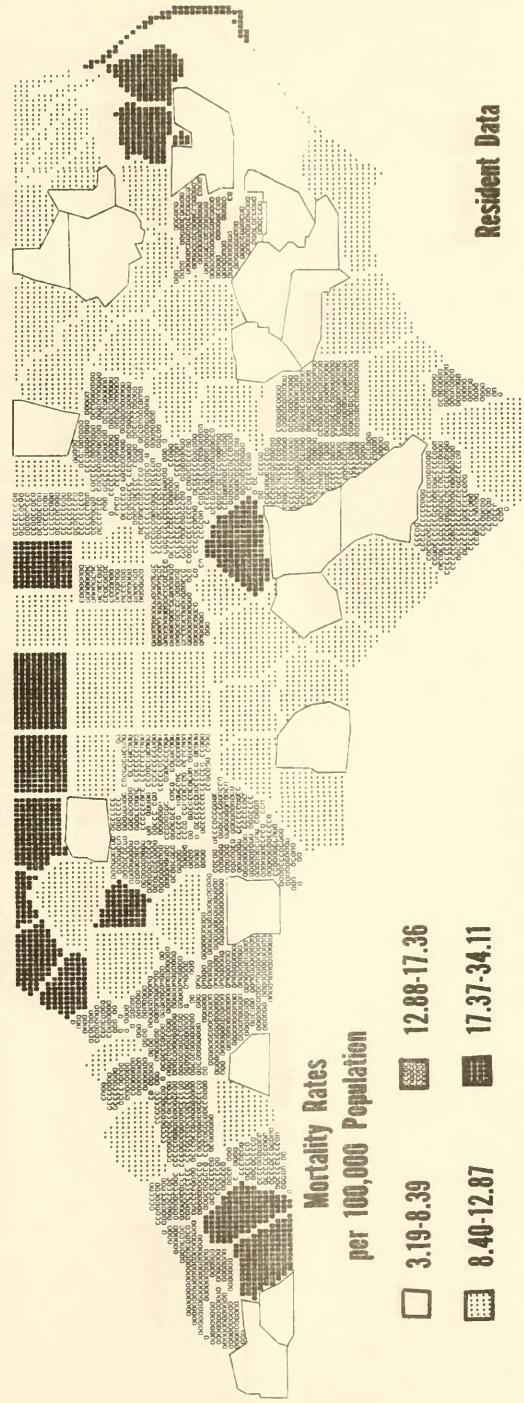


FIGURE 26.A

SUICIDE

NORTH CAROLINA 1971 - 1973

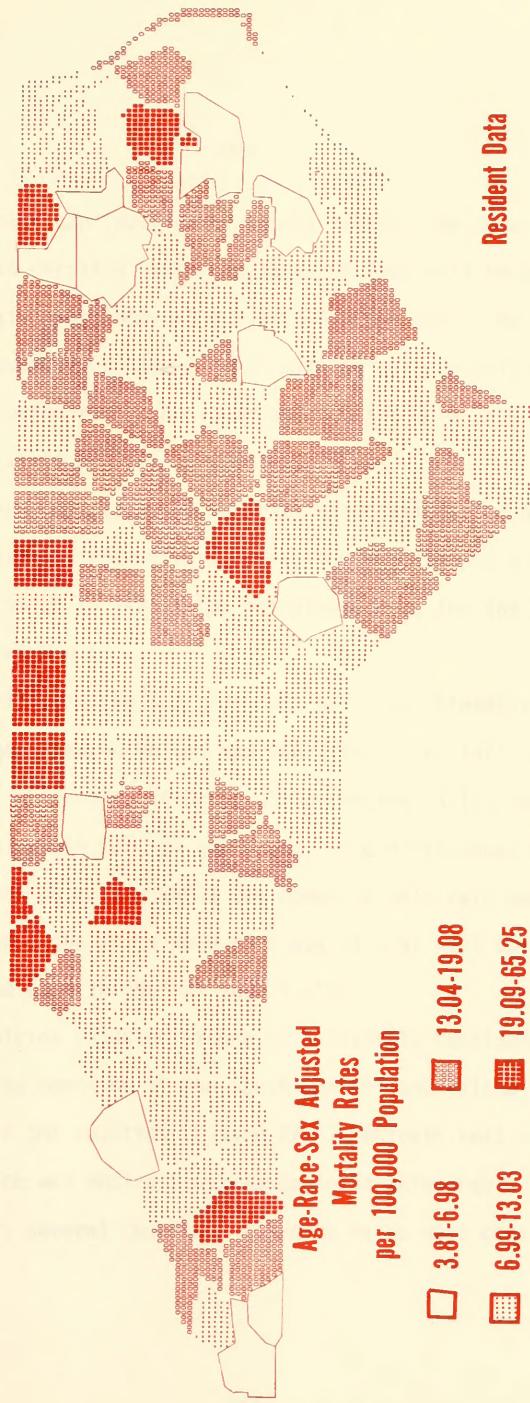


FIGURE 26.B

HOMICIDE

Assuming a continuation of recent trends, the numerical equivalent of an entire North Carolina town--population 6,238--will become victims of homicide in the six-year interval between 1973 and 1980. By today's standards, more than three-quarters of the victims will be male, nearly 60 percent will be nonwhite, ninety percent will be under age 55, and more than three-quarters will have died from assault by firearms and explosives.

These are the bleak and sobering expectations for North Carolinians whose homicide rate has increased 73 percent since 1960 to a level of 15.7 deaths per 100,000 population in 1973. The comparable rate for the United States was 38 percent lower at 9.8 (2).

The North Carolina homicide rate has risen steadily since 1961 with a widening of the gap between whites and nonwhites. The 1973 rates for color and sex groups were: white males (13.6), white females (4.1), nonwhite males (65.2), and nonwhite females (15.5). By age group, rate differences between white and nonwhite males were notable. While the nonwhite male rate peaked at 165.3 for persons 25-34 years, the white male rate was 24.0 at ages 25-34, it dropped to 17.3 at ages 35-44, and rose to 25.1 at ages 45-54.

The homicide rates of Figure 27.A identify contiguous high-risk areas primarily involving counties of the South Central and inland Eastern regions. Adjusted rates for the counties (Figure 27.B) indicate that no county's high homicide experience was entirely attributable to unfavorable age, race, and sex factors. However, several counties' adjusted rates were considerably higher

than their actual rates indicating high homicide activity in the face of relatively low-risk populations. The counties most adversely affected by adjustment were Buncombe, Davidson, Henderson, Randolph, and Surry whose level-one or level-two actual rates corresponded to a level-four adjusted rate. These counties as well as others with level-four adjusted rates should investigate the causes of their significantly high homicide mortality.

The facts presented above are intended to aid law enforcement officials and others in determining ways and means to a safer North Carolina. An immediate goal should be that North Carolina homicides will number considerably less than the anticipated 6,238 by 1980.

TABLE 27

MORTALITY STATISTICS FOR 1973 AND 1971-1973

NORTH CAROLINA RESIDENTS

HOMICIDE

GEOGRAPHICAL AREA	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
NORTH CAROLINA	821	15.70	14.48	14.48
DHR REGIONS				
EASTERN	182	16.21	14.57	12.31
SOUTH CENTRAL	199	17.07	17.40	15.17
NORTH CENTRAL	184	15.99	13.73	14.18
WESTERN	256	14.29	13.01	16.95
COUNTIES				
ALAMANCE	15	14.96	9.72	10.48
ALEXANDER	2	9.66	6.52	7.61
ALLEGHANY	2	23.81	12.00	10.07
ANSON	3	12.78	18.39	12.76
ASHE	1	5.17	6.82	5.11
AVERY	0	0.00	10.01	7.74
BEAUFORT	8	22.33	19.46	16.30
BERTIE	3	14.37	14.36	7.74
BLADEN	8	29.98	28.68	23.19
BRUNSWICK	6	21.45	19.76	20.17
BUNCOMBE	27	18.39	12.26	17.55
BURKE	9	14.47	15.05	19.56
CABARRUS	11	14.36	11.34	13.22
CALDWELL	10	17.02	12.61	13.86
CAMDEN	1	17.95	6.00	3.42
CARTERET	4	12.18	6.12	8.88
CASWELL	2	10.51	17.44	11.01
CATAWBA	11	11.57	10.97	16.32
CHATTHAM	2	6.74	13.42	10.94
CHEROKEE	1	5.96	21.97	17.30
CHOWAN	1	9.19	15.35	12.04
CLAY	0	0.00	6.29	3.63
CLEVELAND	8	10.74	14.35	16.72
COLUMBUS	8	16.60	16.62	15.56
RAVEN	8	12.41	10.38	9.82
CUMBERLAND	42	19.48	14.49	13.85
CURRITUCK	1	12.51	8.66	10.31
DARE	0	0.00	4.39	2.65
DAVIDSON	11	11.12	12.89	18.77
DAVIE	5	25.89	8.65	8.84
DUPLIN	8	21.04	14.88	11.17
DURHAM	30	22.13	19.31	15.38
EDGECOMBE	8	15.09	15.82	10.44
FORSYTH	39	17.61	16.67	16.74
FRANKLIN	10	36.12	21.74	19.09
GASTON	16	10.56	12.37	15.24
GATES	0	0.00	7.90	2.63
GRAHAM	1	16.35	15.94	11.26
GRANVILLE	12	36.70	22.27	18.39
GREENE	2	13.38	8.84	5.71
GUILFORD	50	16.80	15.12	14.77
HALIFAX	13	24.28	13.64	11.21
HARNETT	8	15.56	21.58	20.99

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

MORTALITY STATISTICS FOR 1973 AND 1971-1973, NORTH CAROLINA RESIDENTS
HOMICIDE CONT'D.

COUNTIES (CONT'D)	NUMBER OF DEATHS 1973	DEATH RATE* 1973	DEATH RATE* 1971-73	ADJUSTED DEATH RATE** 1971-73
HAYWOOD	0	0.00	1.56	1.12
HENDERSON	5	11.31	7.56	24.65
HERTFORD	4	17.22	10.02	4.87
HOKE	3	17.54	19.60	13.65
HYDE	0	0.00	12.25	8.04
IREDELL	7	9.21	12.44	14.77
JACKSON	0	0.00	5.99	8.45
JOHNSTON	12	19.09	19.66	20.70
JONES	0	0.00	3.42	2.55
LEE	2	6.24	11.59	11.36
LENOIR	16	28.10	19.97	17.08
LINCOLN	13	37.32	21.35	24.69
MCDOWELL	3	9.67	4.30	3.81
MACON	1	5.87	5.96	4.48
MADISON	1	6.35	10.47	9.18
MARTIN	1	4.14	10.95	9.27
MECKLENBURG	77	21.08	19.28	18.80
MITCHELL	3	22.42	7.39	5.47
MONTGOMERY	3	15.66	17.28	17.12
MOORE	0	0.00	7.36	7.30
NASH	9	14.85	14.89	14.25
NEW HANOVER	13	14.60	20.10	21.55
NORTHAMPTON	4	17.24	16.99	9.04
ONSLOW	14	14.12	10.70	12.12
ORANGE	6	9.45	12.36	14.96
PAMLICO	2	21.38	7.10	5.85
PASQUOTANK	2	7.30	8.54	9.17
PENDER	2	11.06	20.23	16.46
PERQUIMANS	1	11.91	11.81	9.25
PERSON	6	22.83	12.69	13.14
PITT	13	17.34	12.45	10.54
POLK	1	8.37	8.37	12.91
RANDOLPH	9	11.35	10.15	17.91
RICHMOND	8	19.73	21.44	20.51
ROBESON	32	36.72	33.05	22.32
ROCKINGHAM	9	12.05	13.45	14.68
ROWAN	12	13.29	11.77	13.50
RUTHERFORD	8	16.30	10.88	16.38
SAMPSON	4	8.49	13.51	11.46
SCOTLAND	7	25.07	20.50	16.12
STANLY	4	9.13	9.90	12.61
STOKES	1	3.91	5.28	5.97
SURRY	5	9.38	11.98	20.07
SWAIN	3	31.60	17.93	25.43
TRANSYLVANIA	2	10.08	8.41	10.29
TYRRELL	0	0.00	8.55	3.65
UNION	6	10.30	13.92	15.43
VANCE	5	15.87	9.43	5.82
WAKE	29	11.85	14.26	14.26
WARREN	4	23.57	11.88	3.98
WASHINGTON	0	0.00	12.08	7.22
WATAUGA	1	4.07	12.25	10.61
WAYNE	14	15.90	18.98	15.15
WILKES	8	15.31	10.95	15.80
WILSON	16	27.95	18.50	14.81
YADKIN	1	3.84	3.88	8.10
YANCEY	2	15.20	5.08	3.61

*SEE SECTION I

**AGE-RACE-SEX ADJUSTED (SEE SECTION I)

HOMICIDE

NORTH CAROLINA 1971 - 1973

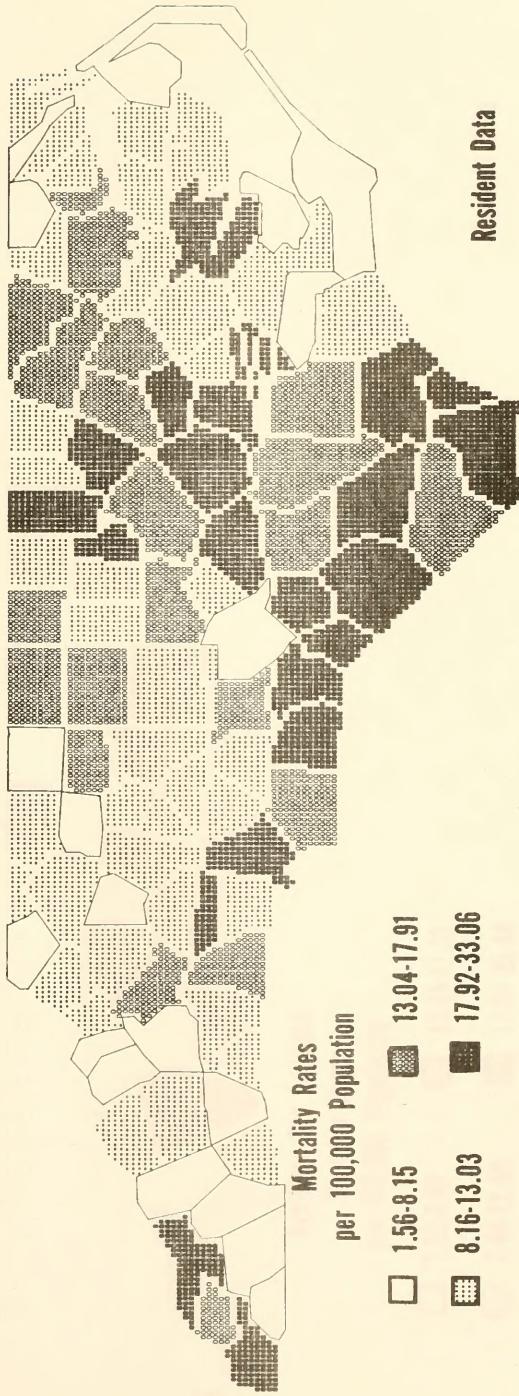


FIGURE 27.A

HOMICIDE

NORTH CAROLINA 1971 - 1973

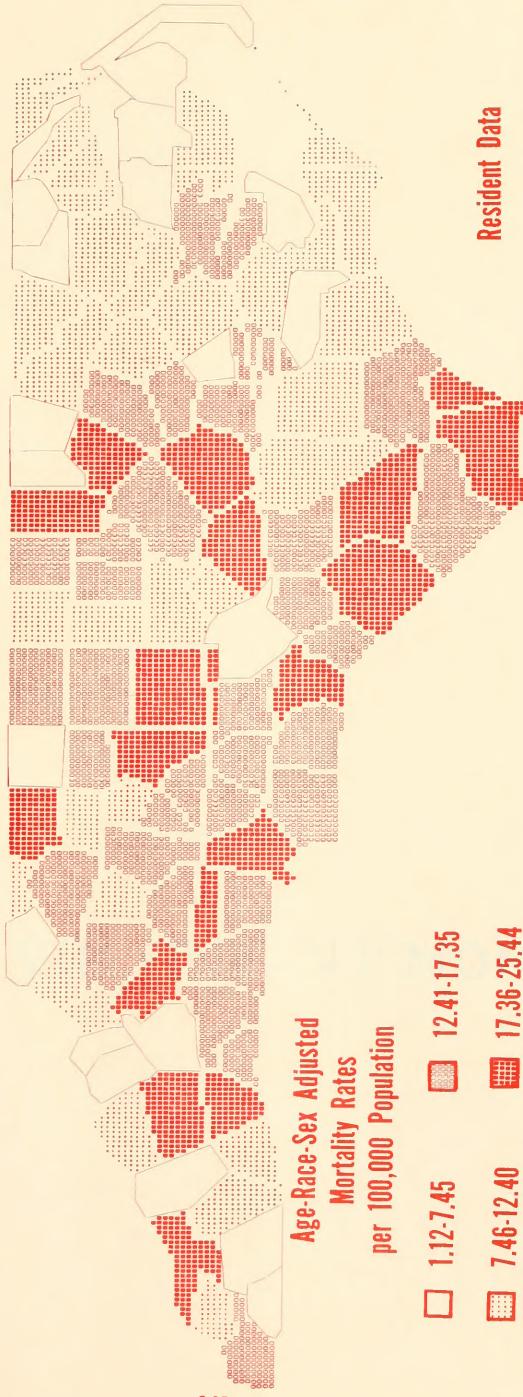


FIGURE 27.B

VIII. INFANT MORTALITY

VIII. INFANT MORTALITY

Nationally and statewide, recent trends in infant mortality are encouraging. Since 1960, the North Carolina death rate for children under one year of age has been reduced by 32 percent to a level of 21.7 deaths per 1,000 live births. The decrease has been greater for nonwhites (43%) than for whites (18%). However, the nonwhite rate in 1973 was 29.8 compared to a white rate of 18.1. This excess in the nonwhite rate should challenge health officials concerned with eliminating racial differences in mortality.

Among North Carolina whites, improvements in neonatal mortality (deaths to infants under 28 days of age) and postneonatal mortality (deaths to infants 28 days to one year of age) have been comparable. Among nonwhites, however, the postneonatal rate has been reduced by 59 percent since 1960 while the neonatal rate has dropped by 29 percent. This differential, which may speak well for the delivery of late infant care to nonwhites, would seem a challenge to those concerned with the delivery of maternal and early infant care.

With respect to the causes of infant mortality, the infant death rates for birth injuries and congenital malformations have dropped slightly since 1960 while rates for other leading causes--influenza and pneumonia, postnatal asphyxia and atelectasis, and immaturity unqualified--have decreased substantially. Regarding the highly publicized disease known as sudden infant death syndrome (SIDS) or "crib death," the 1973 North Carolina data reveal an

incidence of about two such deaths per 1,000 live births. Changes in cause-of-death coding procedures preclude comparison with a 1960 SIDS rate.

As indicated by the legend of Figure 28, infant death rates amongst counties ranged from 6.4 to 62.8 during 1971-73. One major high-risk area was concentrated in the South Central Region and another in the northeast except that Chowan and more northeasterly counties comprised a low-risk area.

TABLE 28

MORTALITY STATISTICS FOR 1973 AND 1971-1973

NORTH CAROLINA RESIDENTS

INFANT MORTALITY (PER 1000 LIVE BIRTHS)

GEOGRAPHICAL AREA	NUMBER OF DEATHS 1973	DEATH RATE 1973	DEATH RATE 1971-73
NORTH CAROLINA	1864	21.74	22.09
DHR REGIONS			
EASTERN	455	22.30	22.89
SOUTH CENTRAL	427	20.75	22.39
NORTH CENTRAL	370	22.09	20.71
WESTERN	612	21.84	22.15
COUNTIES			
ALAMANCE	39	31.12	21.03
ALEXANDER	7	18.37	22.93
ALLEGHANY	4	32.78	28.49
ANSON	13	32.66	35.85
ASHE	3	10.71	20.50
AVERY	3	12.93	16.08
BEAUFORT	13	21.81	25.97
BERTIE	6	18.46	23.39
BLADEN	19	37.62	31.75
BRUNSWICK	14	23.29	18.71
BUNCOMBE	50	23.48	26.41
BURKE	15	15.41	17.63
CABARRUS	27	23.78	18.76
CALDWELL	26	25.16	24.52
CAMDEN	0	0.00	11.76
CARTERET	12	19.07	18.17
CASWELL	7	24.47	26.49
CATAWBA	32	21.06	24.17
CHATHAM	8	21.10	16.04
CHEROKEE	6	23.16	25.47
CHOWAN	0	0.00	11.36
CLAY	2	21.97	20.83
CLEVELAND	45	34.77	33.73
COLUMBUS	26	29.88	28.62
CRAVEN	29	19.71	19.15
CUMBERLAND	92	18.33	21.88
CURRITUCK	2	16.12	14.66
DARE	3	25.00	24.61
DAVIDSON	26	16.80	22.61
DAVIE	7	23.25	20.63
DUPLIN	16	25.23	21.11
DURHAM	32	15.77	17.47
EDGECOMBE	21	24.24	26.63
FORSYTH	64	20.09	16.66
FRANKLIN	9	24.59	17.97
GASTON	56	20.63	21.62
GATES	0	0.00	29.76
GRAHAM	2	21.73	19.80
GRANVILLE	16	35.01	35.66
GREENE	12	56.33	39.61
GUILFORD	102	25.16	22.08
HALIFAX	36	36.65	33.33
HARNETT	20	20.36	24.20

MORTALITY STATISTICS FOR 1973 AND 1971-1973, NORTH CAROLINA RESIDENTS
INFANT MORTALITY (PER 1000 LIVE BIRTHS) CONT'D.

COUNTIES (CONT'D)	NUMBER OF DEATHS 1973	DEATH RATE 1973	DEATH RATE 1971-73
HAYWOOD	11	18.96	22.18
HENDERSON	8	12.15	18.33
HERTFORD	9	23.31	24.20
HOKE	5	15.47	27.96
HYDE	4	66.66	62.76
IREDELL	25	20.39	24.48
JACKSON	8	28.46	23.23
JOHNSTON	20	20.08	22.52
JONES	4	27.02	23.91
LEE	16	30.41	27.82
LENOIR	21	20.54	23.16
LINCOLN	15	26.26	20.83
MCDOWELL	10	17.69	15.98
MACON	8	37.73	18.57
MADISON	6	28.16	32.60
MARTIN	4	9.09	23.84
MECKLENBURG	110	19.32	20.08
MITCHELL	4	22.98	22.96
MONTGOMERY	8	24.46	22.98
MOORE	11	17.57	26.39
NASH	23	22.22	19.90
NEW HANOVER	38	24.75	22.07
NORTHAMPTON	9	26.78	31.44
ONSLOW	47	17.38	19.92
ORANGE	17	20.70	23.20
PAMLICO	2	16.39	19.55
PASQUOTANK	5	12.78	16.74
PENDER	7	22.58	18.22
PERQUIMANS	2	22.22	6.36
PERSON	12	30.53	23.27
PITT	23	19.87	21.91
POLK	9	54.54	33.66
RANDOLPH	21	17.08	18.14
RICHMOND	16	22.34	21.84
ROBESON	53	25.70	24.20
ROCKINGHAM	30	23.86	23.49
ROWAN	26	22.49	17.79
RUTHERFORD	16	21.47	23.30
SAMPSON	15	21.15	22.52
SCOTLAND	18	29.45	31.16
STANLY	16	23.91	20.94
STOKES	8	19.65	13.52
SURRY	8	9.60	20.46
SWAIN	3	19.35	18.07
TRANSYLVANIA	4	15.03	20.80
TYRRELL	2	40.81	33.55
UNION	24	22.68	21.65
VANCE	13	21.41	21.59
WAKE	64	18.05	18.75
WARREN	6	25.10	22.53
WASHINGTON	2	8.23	27.35
WATAUGA	7	20.00	16.99
WAYNE	32	19.45	21.25
WILKES	21	25.54	24.91
WILSON	31	32.39	26.87
YADKIN	2	6.06	12.07
YANCEY	3	14.77	21.48

INFANT MORTALITY

NORTH CAROLINA 1971 - 1973

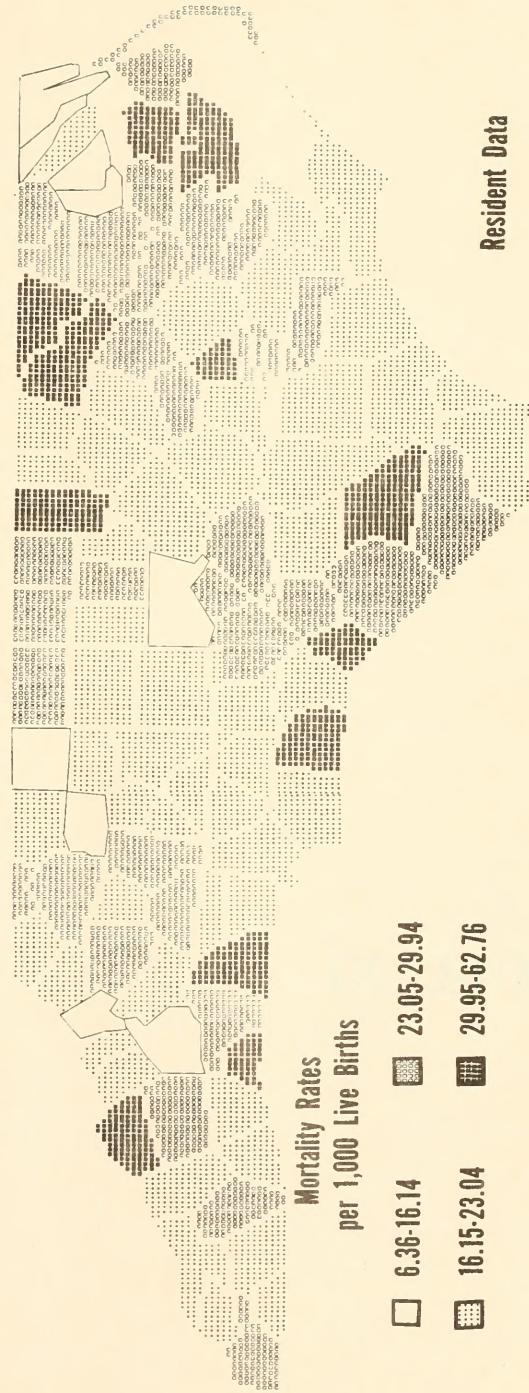


FIGURE 28

IX. SUMMARY

IX. SUMMARY

Recent trends in North Carolina's mortality are disturbing, particularly so since increases in the death rate have largely involved preventable or needless deaths. Since 1960, the death rate for lung cancer has quadrupled, the rate for emphysema has nearly tripled and the rate for cirrhosis of the liver has more than doubled. Rates for external causes of mortality have also risen appreciably--homicide by 70 percent, suicide by 46 percent, and accidents by 29 percent. Altogether, the causes of mortality named above accounted for 75 percent of the State's overall death rate increase since 1960; that is, had rates for these diseases remained at 1960 levels, the 1973 rate for total mortality would have been 8.5 deaths per 1,000 population rather than 9.1, compared to a 1960 rate of 8.3. The resulting numerical difference would have meant approximately 3,333 fewer deaths in 1973.

Adding to these bleak and sobering facts are findings that the North Carolina death rate increase has largely occurred among persons too young to die. For young people ages 15-24, an overall increase of 20 percent since 1960 generally reflects increases in external causes of death with rate increases of 122 percent for suicide, 108 percent for homicide and 32 percent for accidents. Among persons 45-54 years of age, a rate increase of 4 percent since 1960 has involved tripling of the rate for lung cancer; doubling of the rates for emphysema, cirrhosis of the liver, and homicide; as well as increased rates for suicide and accidents. At the same time, the 45-54 age group has experienced some reduction in rates for other leading causes of death including diabetes and most major cardiovascular diseases.

Thus it would appear that one of North Carolina's most pressing needs is that of measures to reduce the rapidly increasing number of preventable deaths, in particular those associated with cigarette smoking, alcohol abuse and other forces which result in intentional and accidental death by man's own hand. While all areas of the State share this need, some areas would appear more in need than others, specifically, counties with significantly high (level-four) adjusted death rates as depicted in the following maps: trachea, bronchus and lung cancer, Figure 13.B; bronchitis, emphysema and asthma, Figure 21.B; cirrhosis of the liver, Figure 22.B; motor vehicle accidents, Figure 24.B; accidents excluding motor vehicle, Figure 25.B; suicide, Figure 26.B; and homicide, Figure 27.B.

A comparison of the maps described above reveals that 66 of the State's 100 counties had significantly high adjusted rates for at least one of those seven causes of death, and 21 counties had significantly high adjusted rates for two or more causes. Among these 21 counties, high death rates most frequently involved motor vehicle accidents in combination with other accidents and/or homicide (6 counties), cirrhosis of the liver in combination with homicide (4 counties), and lung cancer in combination with emphysema (4 counties).

Since adjusted death rates are free of the effects of age, race, and sex composition of the county populations, counties with high adjusted rates should investigate other determinants of mortality. As a whole, the preceding analysis of North Carolina's increasing mortality would seem definitely to implicate two known external factors: alcohol and cigarettes.

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